Stateline Solar Farm Project

Proposed Final Plan Amendment

Final Environmental Impact Statement/ Final Environmental Impact Report

Lead Agencies:

NEPA Lead - U.S. Department of Interior, Bureau of Land Management (BLM)
CEQA Lead - San Bernardino County, California

NOVEMBER 2013

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United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Needles Field Office
1303 South U.S. Highway 95
Needles, CA 92363
www.ca.blm.gov/needles

September 30, 2013

In Reply Refer To:
1610/2800 (P)
CACA-048669
(CAD090.00)

Dear Reader:

Attached for your review and comment is the Final California Desert Conservation Area Plan Amendment, Final Environmental Impact Statement, and Draft Environmental Impact Report (Final CDCA Plan Amendment/FFEIS/EIR) for the Stateline Solar Farm Project. The Bureau of Land Management (BLM) with the County of San Bernardino prepared the CDCA Plan Amendment/FFEIS/FEIR for the Stateline Solar Farm Project taking into account public comments received during the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) process. The decision on the Stateline Solar Farm Project will be to approve, approve with modification, or deny issuance of the right-of-way grant applied for by Desert Stateline, LLC.

The CDCA Plan, as amended, requires that newly proposed power generation sites that are not already identified in the Plan be considered through the plan amendment process. The application area is not identified within the Plan and, therefore, a plan amendment is required to include the area as a recognized element within the Plan and to determine the suitability of the application area for solar development. The BLM also proposes to modify the boundaries of the currently-existing Ivanpah DWMA. This action also requires an amendment to the CDCA Plan. This EIS acts as the mechanism for complying with NEPA, and with CDCA requirements, for both proposed plan amendments.

This CDCA Plan Amendment/FEIS/FEIR for the Stateline Solar Farm Project has been developed in accordance with NEPA and the Federal Land Policy and Management Act of 1976. The CDCA Plan Amendment/FEIS/FEIR contains the proposed plan amendment, an analysis of the impacts of the proposed decisions, and a summary of the written and oral comments received during the public review periods for the FEIS/FEIR and responses to comments.

Pursuant to BLM's planning regulations at 43 Code of Federal Regulations (CFR) 1610.5-2, any person who participated in the planning process for the CDCA Plan Amendment/FEIS/FEIR and has an interest that is or may be adversely affected by that planning decision may protest approval of that planning decision within 30 days from the date the Environmental Protection Agency (EPA) publishes its Notice of Availability for the FEIS in the Federal Register. For

further information on filing a protest, please see the accompanying protest regulations in the pages that follow (Attachment 1). The regulations specify the required elements in a protest. Protesting parties should take care to document all relevant facts and, as much as possible, reference or cite the planning documents or available planning records (e.g., meeting minutes or summaries, correspondence, etc.). To aid in ensuring the completeness of the protest, a protest checklist is attached to this letter (labeled as Attachment 2).

All protests must be in writing and mailed to one of the following addresses:

Regular Mail:	Overnight Mail or Other Delivery:
Director (210)	Director (210)
Attn: Brenda Hudgens-Williams	Attn: Brenda Hudgens-Williams
P.O. Box 71383	20 M Street SE, Room 2134LM
Washington, D.C. 20024-1383	Washington, D.C. 20003

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment-including your personal identifying information-may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Emailed and faxed protests will not be accepted as valid protests unless the protesting party also provides the original letter by either regular or overnight mail postmarked by the close of the protest period. Under these conditions, the BLM will consider the emailed or faxed protest as an advance copy and will afford it full consideration. If you wish to provide the BLM with such advance notification, please direct faxed protests to the attention of Brenda Hudgens-Williams-BLM Protest Expeditor at 202-912-7129, and emailed protests to Brenda_Hudgens-Williams@blm.gov.

The BLM Director will make every attempt to promptly render a decision on each valid protest. The decision will be in writing and will be sent to the protesting party by certified mail, return receipt requested. The decision of the BLM Director shall be the final decision of the Department of the Interior. Responses to protest issues will be compiled in a Director's Protest Resolution Report that will be made available to the public following issuance of the decisions.

Upon resolution of all protests, the BLM may issue a Record of Decision (ROD) adopting the Approved CDCA Plan Amendment/FEIS/FEIR and making a decision regarding issuance of the right-of-way grant for the Stateline Solar Farm Project. Copies of the ROD will be mailed or made available electronically to all who participated in this NEPA process and will be available to all parties through the "Planning" page of the BLM national website (http://www.blm.gov/planning), or by mail upon request.

Unlike the CDCA Plan Amendment decision, issuance of the proposed right-of-way grant decision is an implementation decision that is not subject to protest under the BLM planning regulations. Rather, once the BLM resolves the protests to the Land use plan decision and issues the ROD, the right-of-way decision(s) may be appealed to the Interior Board of Land Appeals pursuant to 43 CFR Part 4, Subpart E, or challenged in federal district court.

Sincerely,

Raymond C. Lee
Field Manager

Attachment 1

Protest Regulations

[CITE: 43CFR1610.5-2]

TITLE 43--PUBLIC LANDS: INTERIOR
CHAPTER II--BUREAU OF LAND MANAGEMENT, DEPARTMENT OF THE INTERIOR
PART 1600--PLANNING, PROGRAMMING, BUDGETING--Table of Contents
Subpart 1610--Resource Management Planning
Sec. 1610.5-2 Protest procedures.

(a) Any person who participated in the planning process and has an interest which is or may be adversely affected by the approval or amendment of a resource management plan may protest such approval or amendment. A protest may raise only those issues which were submitted for the record during the planning process.

(1) The protest shall be in writing and shall be filed with the Director. The protest shall be filed within 30 days of the date the Environmental Protection Agency published the notice of receipt of the final environmental impact statement containing the plan or amendment in the Federal Register. For an amendment not requiring the preparation of an environmental impact statement, the protest shall be filed within 30 days of the publication of the notice of its effective date.

(2) The protest shall contain:

(i) The name, mailing address, telephone number and interest of the person filing the protest;
(ii) A statement of the issue or issues being protested;
(iii)A statement of the part or parts of the plan or amendment being protested;
(iv) A copy of all documents addressing the issue or issues that were submitted during the planning process by the protesting party or an indication of the date the issue or issues were discussed for the record; and
(v) A concise statement explaining why the State Director's decision is believed to be wrong.

(3) The Director shall promptly render a decision on the protest.

(b) The decision shall be in writing and shall set forth the reasons for the decision. The decision shall be sent to the protesting party by certified mail, return receipt requested. The decision of the Director shall be the final decision of the Department of the Interior.

Attachment 2

Resource Management Plan Protest
Critical Item Checklist

The following items *must* be included to constitute a valid protest whether using this optional format, or a narrative letter.
(43 CFR 1610.5-2)

BLM's practice is to make comments, including names and home addresses of respondents, available for public review. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment--including your personal identifying information--may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so. All submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials of organizations and businesses, will be available for public inspection in their entirety.

Resource Management Plan (RMP) or Amendment (RMPA) being protested:

Name:
Address:
Phone Number: ( )

Your interest in filing this protest (how will you be adversely affected by the approval or amendment of this plan?):

Issue or issues being protested:

Statement of the part or parts of the plan being protested:

Attach copies of all documents addressing the issue(s) that were submitted during the planning process by the protesting party, <u>OR an indication of the date the issue(s) were discussed for the record</u>.
Date(s):

A concise statement explaining why the State Director's decision is believed to be wrong:

Abstract

This Final Plan Amendment (PA) and Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR) analyzes the impacts of Desert Stateline, LLC's (Applicant's) proposed Stateline Solar Farm Project. The applicant, a wholly-owned subsidiary of First Solar Development, Inc. (First Solar), has filed Application CACA #48669 for a Right-of-Way (ROW) authorization with the Bureau of Land Management (BLM) to construct, operate, maintain, and decommission an approximately 2,143 acre, 300-megawatt (MW) alternating current (AC) solar photovoltaic (PV) energy generation facility (Proposed Action or Project). All of the proposed facilities would be located on public lands managed by the BLM Needles Field Office. The proposed facility would be located in Ivanpah Valley near the California-Nevada border. The proposed location is approximately 2 miles southwest of the community of Primm, Nevada, and approximately 0.5 miles to the west of Interstate 15 (I-15).

The Final PA and Final EIS/EIR analyzes the impacts of BLM approving a ROW grant for the construction, operations and maintenance, and decommissioning of the Project and associated amendment to the California Desert Conservation Area Plan 1980 (CDCA Plan). It also analyzes the impacts of three alternative configurations of the Project, and three additional alternative land use plan amendments. The EIS/EIR also analyzes the impacts of the approval of well permits by the County. This Final EIS/EIR also discusses mitigation measures that, if adopted, would avoid, minimize, or mitigate the adverse environmental impacts identified.

Point of Contact:

Mr. Jeffrey Childers
BLM California Desert District Office
22835 Calle San Juan de Los Lagos
Moreno Valley, California 92553-9046

(951) 697-5308

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Figure 4.18-3D	Alternative 3 Simulated View from Key Observation Point 06
Figure 4.18-4A	Existing View from Key Observation Point 07
Figure 4.18-4B	Alternative 1 Simulated View from Key Observation Point 07
Figure 4.18-4C	Alternative 2 Simulated View from Key Observation Point 07
Figure 4.18-4D	Alternative 3 Simulated View from Key Observation Point 07
Figure 4.18-5A	Existing View from Key Observation Point 09
Figure 4.18-5B	Alternative 1 Simulated View from Key Observation Point 09
Figure 4.18-5C	Alternative 2 Simulated View from Key Observation Point 09
Figure 4.18-5D	Alternative 3 Simulated View from Key Observation Point 09
Figure 4.18-6A	Existing View from Key Observation Point 10

Figure 4.18-6B Alternative 1 Simulated View from Key Observation Point 10
Figure 4.18-6C Alternative 2 Simulated View from Key Observation Point 10
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Figure 4.18-7A Existing View from Key Observation Point 12
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Figure 4.18-7C Alternative 2 Simulated View from Key Observation Point 12
Figure 4.18-7D Alternative 3 Simulated View from Key Observation Point 12
Figure 4.19-1 Well Locations - Alternative 1: Proposed Action

Appendix B - Scoping Report

Appendix C - Visual Resource Analysis

Appendix D - ACEC Analysis

Appendix E – Biological Resources Technical Report

Appendix F – Public Comments

Appendix G – Response to Comments

Appendix H – Jurisdictional Delineation of United States Army Corps of Engineers and California Department of Fish and Game Jurisdiction

Executive Summary

ES.1 Background and Project Overview

This *Proposed* Plan Amendment (PA) and *Final* Environmental Impact Statement/Environmental Impact Report (EIS/EIR) analyzes the impacts of Desert Stateline, LLC's (Applicant's) proposed Stateline Solar Farm Project. The applicant, a wholly-owned subsidiary of First Solar Development, Inc. (First Solar), has filed Application CACA #48669 for a Right-of-Way (ROW) authorization with the Bureau of Land Management (BLM) to construct, operate, maintain, and decommission an approximately 2,143 acre, 300-megawatt (MW) alternating current (AC) solar photovoltaic (PV) energy generation facility (Proposed Action or Project). The location of the proposed facility within its regional context is shown in Figure 1-1 (See Appendix A for all figures referenced in the PA and *Final* EIS/EIR).

The PA and EIS/EIR analyzes the impacts of BLM approving a ROW grant for the construction, operations and maintenance, and decommissioning of the Project and associated amendment to the California Desert Conservation Area Plan 1980 (CDCA Plan; BLM 1980). It also analyzes the impacts of three alternative configurations of the Project, and three additional alternative land use plan amendments. The EIS/EIR also analyzes the impacts of the approval of well permits by San Bernardino County (the County). In addition to these decisions, the *PA and* EIS/EIR evaluates the proposed modification by BLM of the boundaries of the existing Ivanpah Desert Wildlife Management Area (DWMA) by adding the Northern Ivanpah Valley Unit to the existing DWMA. The alternatives evaluated in the *PA and* EIS/EIR include:

- Alternative 1: The Proposed Action – 300 MW generated on 2,143 acres;
- Alternative 2: 2,385 Acre Alternative – 300 MW generated on 2,385 acres;
- *Revised* Alternative 3: *1,685* Acre Alternative – 300 MW generated on *1,685* acres;
- Alternative 4: Reduced Acreage Alternative – 232 MW generated on 1,766 acres;
- Alternative 5: No Action Alternative – No issuance of a ROW Grant, No County Approval, No Land Use Plan (LUP) Amendment;
- Alternative 6: No Project, Exclude Solar on Site Alternative – No issuance of a ROW Grant, No County Approval, Approval of a LUP Amendment to identify site of the Proposed Action as unsuitable for solar energy development; and
- Alternative 7: No Project, Approve Solar on Site Alternative – No issuance of a ROW Grant, No County Approval, Approval of a LUP Amendment to identify site of the Proposed Action as suitable for future solar energy development.

This *Final* EIS/EIR is also being used as the mechanism to evaluate modifications to the CDCA Plan that would potentially modify the boundaries of the existing Ivanpah DWMA.

The Applicant proposed to construct, operate, maintain, and decommission the proposed Stateline Solar Farm facility, a 300 MW solar photovoltaic energy facility, on 2,143 acres in San Bernardino County, California, near the California-Nevada border at Primm, Nevada. The project would be located entirely on public lands managed by the BLM Needles Field Office.

Proposed Action (Alternative 1)

The *Proposed Action* (Alternative 1) consists of the construction, operation, maintenance, and decommissioning of photovoltaic solar arrays and associated facilities necessary to generate 300 MW of electrical energy. Under this alternative, the BLM and County would take the following actions:

- BLM would approve the proposed ROW grant for the Alternative 1 site configuration, which totals 2,143 acres;
- BLM would amend the CDCA Plan to identify the Desert Stateline Solar Farm facility *site acreage as an area suitable for solar development* within the Plan;
- BLM would modify the boundary of the existing Ivanpah DWMA, as described above in Section 2.1.3.6;
- BLM would modify the designations of open routes; and
- The County would issue well permits.

ES.2 Purpose and Need

The National Environmental Policy Act (NEPA) guidance published by the Council on Environmental Quality (CEQ) states that the Purpose and Need section of an Environmental Impact Statement "shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action" (Title 40 of the Code of Federal Regulations [CFR] §1502.13). The following discussion sets forth the purpose of and need for the project as required under NEPA.

ES.2.1 BLM Purpose and Need

In accordance with Federal Land Policy and Management Act (FLPMA *Sections 102(a)(7), 302(a), and 601*), public lands are to be managed for multiple uses that take into account the long-term needs of future generations for renewable and non-renewable resources. The Secretary of the Interior is authorized to grant ROWs on public lands for systems of generation, transmission, and distribution of electric energy (Section 501(a)(4)). Taking into account the BLM's multiple use mandate, the purpose and need for the Proposed Action is to respond to a FLPMA ROW application submitted by the Applicant to construct, operate, maintain, and decommission a solar energy-generating facility and associated infrastructure on public lands administered by the BLM in accordance with FLPMA, BLM ROW regulations, and other applicable Federal laws and policies.

In conjunction with FLPMA, the Proposed Action would, if approved, assist the BLM in addressing the following management objectives:

- Executive Order 13212, dated May 18, 2001, which mandates that agencies act expediently and in a manner consistent with applicable laws to increase the production and transmission of energy in a safe and environmentally sound manner."
- Secretarial Order 3285, dated March 11, 2009, and amended *as 3285A1* on February 22, 2010, which "establishes the development of renewable energy as a priority of the Department of the Interior."
- *The President's Climate Action Plan, announced on June 25, 2013, to reduce carbon pollution, prepare the U.S. for the impacts of climate change, and lead international efforts to address global climate change. To ensure America's continued leadership in clean energy, the Climate Action Plan set a new goal for the Department of the Interior to permit enough renewable electricity generation from public lands to power more than 6 million homes by 2020. This goal will require the approval of 20,000 MWs of renewable energy projects on the public lands by 2020.*

The BLM will decide whether to deny the proposed ROW, grant the ROW, or grant the ROW with modifications. The BLM may include any terms, conditions, and stipulations it determines

to be in the public interest, and may include modifying the proposed use or changing the route or location of the proposed facilities (43 CFR 2805.10(a)(1)).

In connection with its decision on the Proposed Action, the BLM will also consider potential amendments to the CDCA Plan. The CDCA plan, while recognizing the potential compatibility of solar energy facilities on public lands, requires that all sites associated with power generation or transmission not identified in the plan be considered through the land use plan amendment process. BLM policy encourages the avoidance of development on lands with high conflict or sensitive resource values (Instruction Memorandum [IM] 2011-061). While the BLM is not required to formally determine whether certain high conflict lands are or are not available for solar energy development, if BLM decides to make that decision, it must amend the CDCA plan. Here, the BLM is potentially deciding whether to amend the CDCA plan to identify the Project site as suitable or unsuitable for solar energy development. At the same time, the BLM will also decide whether to amend the CDCA plan to make high conflict or sensitive resource value areas within the project application area unavailable for solar development.

ES.2.2 San Bernardino County Purpose and Need

As part of the Proposed Action, the Applicant has submitted well construction permits to the County for up to two groundwater production wells and three groundwater monitoring wells. The wells would be used to produce groundwater for dust suppression, fire response during construction, and for fire response and sanitary purposes during operations. Issuing the well permits is a discretionary action on the part of the County, and therefore warrants California Environmental Quality Act (CEQA) review.

ES.2.3 Applicant's Objectives

The purpose and need describes BLM and the County's purpose and need for the Proposed Action, not the Applicant's interests and objectives. However, the Applicant's interests and objectives, including any constraints or flexibility with respect to their proposal, help to inform the BLM's and County's decisions and cannot be ignored in the NEPA and CEQA process. This information helps the BLM and County to determine which alternatives should be analyzed in detail through the NEPA and CEQA processes and can provide the basis for the determination that certain alternatives are unreasonable and thus eliminated from detailed analysis. (BLM IM 2011-059).

The Applicant's stated purpose for the project is to create a clean, renewable source of electricity that helps meet California's growing demand for power and helps fulfill national and state renewable energy goals and greenhouse gas (GHG) emissions reduction requirements. The state's Renewable Portfolio Standard (RPS) and GHG emissions reduction requirements include the requirements set forth in Senate Bills (SB) 1078 and X1-2 (California RPS Program), Assembly Bill (AB) 32 (California Global Warming Solutions Act of 2006), and the Governor's Executive Order S-14-08 to increase the state's Renewable Energy Standard to 33 percent renewable power by 2020. In particular:

- California's RPS mandate requires the state's Investor-Owned Utilities (IOUs) to supply 33 percent of California's total electricity through renewable energy generation by 2020, as set forth in SB 1078 (establishing the California RPS Program) and SB X1-2 (accelerating the requirement to 33 percent requirement to 2020).
- California's GHG emission reduction goals set forth in AB 32 require the state's GHG emissions to be reduced to 1990 levels by 2020.

The Applicant's specific objectives for the project, as stated in their Plan of Development (First Solar 2011) are:

- Deploy a technology that has been commercially proven and that is safe, readily available, environmentally responsible, and acceptable to the public utilities;
- Establish 300 MW of generating capacity for emission-free PV solar electricity in an area of high solar insolation and in proximity to existing transmission infrastructure, while avoiding, minimizing, and mitigating the impacts to environmentally sensitive areas;
- Develop a project that is feasible to construct and operate while providing utility customers with a cost-competitive, cleaner alternative to conventionally generated electricity;
- Provide community benefits through new jobs, spending in local businesses, and additional sales tax revenues;
- Employ an average of approximately 400 on-site workers during the 2 to 4 year construction period;
- Interconnect to the newly upgraded El Dorado-Ivanpah transmission line, which is located in a federally-designated transmission corridor near the project site; and
- Generate electricity in an arid environment with minimal water use.

ES.3 Decisions to be Made

As defined by the purpose and need, the BLM is responding to the Applicant's application for a ROW grant to construct, operate, maintain, and decommission a solar energy facility on public lands. In doing so, the BLM will adopt one of the alternatives described below (see Section ES.3.1).

Alternatives considered in this *PA and Final* EIS/EIR are developed based on issues identified by the BLM and the County of San Bernardino, California (County), as well as comments received during the public scoping process. *In addition, the agencies refined the alternatives evaluated in the Draft EIS/EIR based on public comments on that document, and those refinements are incorporated into this Final EIS/EIR.* NEPA and CEQA (Section 15126.6) require consideration, in detail, of a range of alternatives that are considered reasonable. Section 6.6.3 of the BLM NEPA Handbook (BLM 2008) allows the evaluator to eliminate alternatives from detailed analysis if they would be ineffective (would not respond to the purpose and need), would be technologically and economically infeasible, are inconsistent with basic policy objectives for the management of the area, or if their implementation is remote or speculative. In addition to these NEPA requirements, CEQA requires consideration of alternatives that would avoid or reduce significant adverse impacts.

This document provides information to the BLM authorized officer to make the following decisions:

- Should the proposed ROW grant be issued as applied for, issued for a modified project, or denied? If the BLM decides to approve the issuance of a ROW grant, the BLM will also amend the CDCA Plan as required.
- Should the boundaries of the Ivanpah DWMA be modified? Similarly, if the BLM decides to modify the boundaries of the DWMA, the BLM will also amend the CDCA Plan as required.
- Should the CDCA Plan be amended to identify the project site or portions of the project site suitable or unsuitable for solar development?

The document also provides information for the County to facilitate their decision whether or not to approve permits for up to two groundwater production wells and three groundwater monitoring wells associated with the construction, operation, maintenance, and decommissioning of the Project.

ES.3.1 Alternatives

Alternatives were evaluated for inclusion in the EIS/EIR using appropriate screening criteria pursuant to NEPA and CEQA. These criteria were used to evaluate whether a potential alternative would: achieve the project purpose and meet most project objectives; be feasible; and offer environmental advantages over the proposed project, including avoidance or reduction of significant environmental impacts. As part of the alternatives screening process, alternatives located on BLM-administered lands and other affected lands and resources were evaluated. Of those alternatives, four action alternatives, including the proposed Stateline Solar Farm or Proposed Action, and three No Action Alternatives were developed and evaluated in this EIR/EIS, as follows (see Chapter 2 for complete descriptions of these alternatives):

- **Proposed Action – 300 MW generated on 2,143 Ac (Alternative 1).** This alternative consists of the use of cadmium-telluride (CdTe)-based photovoltaic panels designed to generate 300 MW of electrical energy on a single, contiguous footprint comprising 2,143 acres of public lands. This alternative would also include modification of the boundaries of the Ivanpah DWMA, resulting in a net addition of *23,363* acres to the existing DWMA, by BLM. Under this alternative, the County would issue well permits for the facility's groundwater production and monitoring wells.
- **2,385 Acre Alternative (Alternative 2).** This alternative consists of the use of CdTe-based photovoltaic panels designed to generate 300 MW of electrical energy on 2,385 acres. Under this alternative, the solar panels would be developed in a bifurcated footprint (two separate arrays). This alternative would also include modification of the boundaries of the Ivanpah DWMA, resulting in a net addition of *23,121* acres to the existing DWMA, by BLM. Under this alternative, the County would issue well permits for the facility's groundwater production and monitoring wells.
- ***1,685* Acre Alternative (*Revised* Alternative 3).** This alternative consists of the use of CdTe-based photovoltaic panels designed to generate 300 MW of electrical energy on a single, contiguous footprint comprising *1,685* acres of public lands. The footprint of this alternative would be adjusted from that proposed in Alternative 1 in order to reduce impacts to environmental resources. This alternative would also include modification of the boundaries of the Ivanpah DWMA, resulting in a net addition of *23,821* acres to the existing DWMA, by BLM. Under this alternative, the County would issue well permits for the facility's groundwater production and monitoring wells.
- **Reduced Acreage Alternative (Alternative 4).** This alternative consists of the use of CdTe-based photovoltaic panels designed to generate 232 MW of electrical energy on a single, contiguous footprint comprising 1,766 acres of public lands. The footprint of this alternative would be the same as the northern portion of the bifurcated footprint in Alternative 2. This alternative would also include modification of the boundaries of the Ivanpah DWMA, resulting in a net addition of *23,740* acres to the existing DWMA, by BLM. Under this alternative, the County would issue well permits for the facility's groundwater production and monitoring wells.
- **No Action Alternative (Alternative 5).** Under this alternative, there would be no issuance of a ROW Grant, no County well permits, no LUP Amendment, and no modification of the boundaries of the Ivanpah DWMA.

- **No Project, Exclude Solar on Site Alternative (Alternative 6).** Under this alternative, there would be no issuance of a ROW grant *and* no County well permits. *This alternative would include modification of the* boundaries of the Ivanpah DWMA*, resulting in a net addition of 25,506 acres to the existing DWMA.* This alternative would include approval of a LUP Amendment *finding that the site is not suitable for solar energy development*.
- **No Project, Approve Solar on Site Alternative (Alternative 7).** Under this alternative, there would be no issuance of a ROW grant, no County well permits, and no modification of the boundaries of the Ivanpah DWMA. This alternative would include approval of a LUP Amendment *finding that the site is suitable for solar energy development*.

ES.3.2 Comparison of Alternatives

Table ES-1 summarizes the alternatives and their impacts. The selection of one of the four action alternatives (Alternatives 1, 2, 3, and 4) would result in amendment of the CDCA Plan to *identify the site as suitable for* development of a solar energy project. However, the actual environmental consequences anticipated would result from the development of the Proposed Action; therefore, the table summarizes environmental impacts resulting from the project pursuant to NEPA and CEQA (Guidelines Section 15123(b)(1)).

ES3.3 Federal Lead Agency Preferred Alternative and CEQA Environmentally Superior Alternative

The "preferred alternative" is a preliminary indication of the federal responsible official's preference of action, which is chosen from among the Proposed Action and alternatives. The preferred alternative may be selected for a variety of reasons (such as the priorities of a particular lead agency) in addition to the environmental considerations discussed in the EIS/EIR. The BLM's Preferred Alternative is *Revised* Alternative 3.

In accordance with CEQA requirements, an "environmentally superior alternative" must be identified among the alternatives analyzed in an EIR or EIS/EIR. The environmentally superior alternative is the alternative found to have an overall environmental advantage compared to other alternatives based on the impact analysis in the EIR. If the environmentally superior alternative is the No Project alternative, State CEQA Guidelines Section 15126.6(e)(2) requires the EIR to identify an environmentally superior alternative from among the other alternatives. For this Proposed Action, the No Project alternative would be superior to any of the action alternatives because the impacts of implementing the Proposed Action would be avoided for the time being. Among the other alternatives, San Bernardino County has identified *Revised* Alternative 3 as the environmentally superior alternative because, of the action alternatives, it would have the smallest impact on wildlife habitat and connectivity.

ES.4 Connected/Cumulative Actions

There are no other actions that are connected to the Stateline Solar Farm that would require any action from the BLM or San Bernardino County. The Eldorado-Ivanpah Transmission Project (EITP), to which the proposed facility would connect, has already been approved and *construction has been completed*. The EITP was considered in the cumulative impact analysis in this EIS/EIR and, similarly, the cumulative impact analysis in the EITP EIS/EIR considered the impacts of the proposed project and other reasonably foreseeable renewable energy projects in region.

ES.5 Environmental Consequences

ES.5.1 Impact Summary Table

Table ES-1 summarizes the environmental impacts that would occur as a result of the Proposed Action and alternatives by environmental resource. The environmental consequences section for each resource in Chapter 4 identifies the mitigation measures included to avoid or substantially reduce adverse impacts. The unavoidable adverse impacts that would remain after mitigation are also discussed at the end of each section in Chapter 4.

ES.5.2 Major Conclusions

Air Quality. Air pollutant emissions during construction would result in temporary and unavoidable adverse nitrogen oxides (NO_x) and particulate matter, less than 10 microns (PM_{10}) impacts.

Vegetation Resources. Temporary disturbance and *long-term* loss of sensitive vegetation communities, jurisdictional areas, and special status plant species would occur during construction.

Visual Resources. Unavoidable impacts from the conversion of a natural desert landscape to a landscape dominated by industrial character. Long-term land scarring following project decommissioning due to the large impact area and long recovery time for desert vegetation.

Water Resources. The use of groundwater by the project could result in mobilization of saline groundwater in the local area of the project wells.

Wildlife Resources. Temporary disturbance and *long-term* loss of occupied desert tortoise habitat, and unavoidable impacts to individuals present within the project area during construction.

ES.5.3 Areas of Controversy

Based on input received from agencies, organizations, Native Americans and Tribal Governments, and members of the general public during scoping for the Draft EIS/EIR *and review of the PA and Draft EIS/EIR*, several areas of controversy related to the Stateline Solar Farm facility emerged, including:

- Opposition to the placement of a large solar project on largely undisturbed desert land
- Concern regarding the impacts of the project on biological resources
- Concern regarding groundwater use and quality
- Concern regarding the range of alternatives considered

Extensive comments were received during the scoping process for the project. The scoping process and public input received during that process are provided in detail in Appendix B, Pubic Scoping Report. *Extensive comments were also received on the Draft EIS/EIR. Those comments are included in Appendix F, and the manner in which the agencies responded to those comments in the development of the PA and Final EIS/EIR is provided in Appendix G.*

ES.5.4 Issues to be Resolved

Verbal and written comments were received during the scoping process *and public review period for the Draft EIS/EIR* for the Stateline Solar Farm project. The scoping process and public input received during that process are provided in detail in Appendix B, Public Scoping Report. *The public comments on the Draft EIS/EIR are provided in Appendix F, and the agencies' responses to those comments are provided in Appendix G.*

ES.6 Lead Agency Roles and Approvals

ES.6.1 Bureau of Land Management

As discussed in Section ES.2.1, the BLM's role is to respond to the Applicant's application under Title V of the FLPMA (43 United States Code [U.S.C.] 1761) for a ROW grant to construct, operate, maintain, and decommission a solar energy facility on public lands in compliance with FLPMA, BLM ROW regulations, and other applicable federal laws. The BLM will decide whether to approve, approve with modification, or deny issuance of a ROW grant to the Applicant for the proposed Stateline Solar Farm facility. The BLM's action will also include consideration of amending the CDCA Plan 1980, as amended. If the BLM decides to approve the issuance of a ROW grant, the BLM will also amend the CDCA Plan as required. The BLM will also consider modification of the boundaries of the Ivanpah DWMA.

ES.6.2 San Bernardino County

As part of the Proposed Action, the Applicant has submitted well construction permits to the County for up to two groundwater production wells and three groundwater monitoring wells. The wells would be used to produce groundwater for dust suppression, fire response during construction, and for fire response and sanitary purposes during operations. Issuing the well permits is a discretionary action on the part of the County, and therefore warrants CEQA review.

ES.7 Native American Government-to-Government Consultation

The BLM consults with Indian Tribes on a government-to-government basis in accordance with several authorities including NEPA, the NHPA, the American Indian Religious Freedom Act, and Executive Order 13007. Under Section 106 of the NHPA, the BLM consults with Indian Tribes as part of its responsibilities to identify, evaluate, and resolve adverse effects on historic properties affected by BLM undertakings.

The BLM notified tribes and requested government-to-government consultation by letter on November 21, 2007, at the earliest stages of application review. The BLM described the preliminary results of the Class III archaeological survey by letter on December 23, 2010. Tribes were sent a notification of the publication of the NOI on August 19, 2011. The BLM notified the tribes about the proposed geotechnical testing for the project in a letter dated November 23, 2011. The final archaeological survey reports and the agency determinations and findings were provided to the Tribes concurrently with the notification to SHPO. The following ten Federally recognized Indian tribes have been invited to consult on the Project:

- *Chemehuevi Indian Tribe*
- *Colorado River Indian Tribe*
- *Fort Mojave Indian Tribe*
- *Las Vegas Paiute Tribe*

- *Moapa Band of Paiute Indians*
- *Morongo Band of Mission Indians*
- *Ramona Band of Mission Indians*
- *San Manuel Band of Mission Indians*
- *Timbisha Shoshone Tribe*
- *Twenty-Nine Palms Band of Mission Indians*

The following three non-federally recognized Indian tribes or Tribal Organizations have also been contacted and invited to consult on the Project:

- *Pahrump Paiute Tribe*
- *San Fernando Band of Mission Indians*
- *Serrano Nation of Indians*

All letters included a request that the Tribes identify any areas to which they attach cultural or religious significance so that these sites may be considered in the environmental review of the proposed project. The Pahrump Paiute Tribe indicated their opposition to the project by letter on March 19, 2012. The BLM has received no other responses to our requests to consult on the Stateline Project, and no areas of Tribal significance have been identified.

Raymond Lee, BLM Needles Field Manager, and other BLM staff held a Tribal Representatives Open House at the BLM Needles Field Office on January 17, 2013. The following individuals were in attendance:

- *Edward (Tito) D. Smith, Chairperson of the Chemehuevi Indian Tribe*
- *Timothy Williams, Chairperson of the Fort Mohave Indian Tribe*
- *Wilene Holt, Museum Director of the Colorado River Indian Tribe*

In addition to the above correspondence, First Solar with the approval of the BLM, sent letters to the above Tribes on April 24, 2013 inviting them to attend an informational meeting in Nipton, CA and field visit to the Stateline Solar Farm Project area. The informational meeting occurred on May 9, 2013 and included a tour of the Stateline Solar Farm Project area, a slide presentation and question-and-answer session in Primm, NV. The meeting was attended by one representative each from the Las Vegas Paiute Tribe, the San Manual Band of Mission Indians and the Timbisha Shoshone Tribe. Attendees also included First Solar representatives, ECORP archaeologists, and the BLM Needles Field Office archaeologist.

ES.8 Public Participation

Scoping activities were conducted by the BLM in compliance with the requirements of NEPA. The Notice of Intent was published in the Federal Register (Volume 76, No. 150) on August 4, 2011. The County's Notice of Preparation was published on August 20, 2011. BLM and San Bernardino County hosted one public scoping on Wednesday, August 31, 2011, from 6:00 pm to 8:00 pm at the Primm Valley Golf Clubhouse with a total attendance of 44 individuals. A Public Scoping Report was released for public review in November 2011 and is included as Appendix B.

The Draft EIS/EIR was distributed for public review and comment in accordance with NEPA and CEQA procedures. Copies were submitted to the State Clearinghouse for agency distribution. Copies of the Draft EIS/EIR were distributed to all concerned federal, state, and local agencies,

environmental groups, interested individuals, and are available at area public libraries for the interested public to review.

Two Notices of Availability of the Draft EIS/EIR were published in the Federal Register, one by U.S. Environmental Protection Agency (EPA) and one by the BLM. These notices gave agencies, tribes, organizations, and the public notice of availability of this document and the opportunity to provide comment on its content. To comply with CEQA regulations, the County also published a Notice of Completion in a newspaper of general circulation indicating the availability of the Draft EIS/EIR regarding the Proposed Project. The County also sent a Notice of Completion to the State Clearinghouse, concerned agencies, property owners, and other concerned parties.

The filing of the Notice of Availability by the EPA initiated a 90-day public review and comment period to comply with applicable regulations, and the filing of the Notice of Completion by the County of San Bernardino initiated a concurrent agency and public review and comment period to comply with CEQA regulations. The dates, times and specific locations for the public review meeting were announced in advance on the BLM California website (http://www.blm.gov/ca/st/en.html) with a link to the electronic version of the document and other supporting information on the BLM, Needles Field Office website (http://www.blm.gov/ca/st/en/fo/needles.html). Likewise, the news release advertising meeting details and other EIS/EIR documents were electronically posted on the San Bernardino County website

(http://www.co.sanbernardino.ca.us/landuseservices/Public%20Notices/Projects/Projects.htm).

The public comment period on the Draft EIS/EIR closed on February 21, 2013. Three public comment meetings were held to provide information on the Draft EIS/EIR and solicit public comments. These meetings were held at:

- *Primm Valley Golf Club, January 9, 2013, at 2:00 pm.*
- *Primm Valley Golf Club, January 9, 2013, at 6:00 pm*
- *Holiday Inn Express, Barstow, California, January 10, 2013, at 6:00 pm.*

The public comments received were compiled, and are included as Appendix F. The comments were considered, and changes were made in the Final EIS as appropriate. The responses to public comments are provided in Appendix G.

Table ES-1. Comparison of Impacts by Alternative

Resource	Alternative 1 Proposed Action	Alternative 2 2,385 Ac Alternative	Revised Alternative 3 1,685 Ac Alternative	Alternative 4 Reduced Acreage Alternative	Alternative 5 No Action Alternative	Alternative 6 No Project, Exclude Solar	Alternative 7 No Project, Approve Solar
Air Resources	Adverse impacts from ground disturbance, dust generation, vehicle *emissions would be slightly lower than Alternative 2 due to smaller footprint, but still substantial.*	*Adverse impacts from ground disturbance, dust generation, vehicle emissions would be highest of any of the action alternatives due to largest acreage and bifurcated footprint.*	*Adverse impacts from ground disturbance, dust generation, vehicle emissions would be lowest of any of the action alternatives due to smallest acreage and use of mowing in site preparation.*	*Adverse impacts from ground disturbance, dust generation, vehicle emissions would be lower than Alternatives 1 and 2 due to smaller footprint, but still substantial due to site-wide grading and compaction.*	No emissions near project site.	No emissions near project site.	No emissions near project site. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Climate Change	Adverse impacts from vehicle use *slightly lower than Alternative 2 due to smaller footprint.* Beneficial impacts from eliminating need for natural gas generation *are the same for Alternatives 1, 2, and 3 due to same power output.*	*Adverse impacts from vehicle emissions would be highest of any of the action alternatives due to largest acreage and bifurcated footprint. Beneficial impacts from eliminating need for natural gas generation are the same for Alternatives 1, 2, and 3 due to same power output.*	*Adverse impacts from vehicle use slightly lower than Alternative 2 due to smaller footprint. Beneficial impacts from eliminating need for natural gas generation are the same for Alternatives 1, 2, and 3 due to same power output.*	*Adverse impacts from vehicle use slightly lower than Alternative 2 due to smaller footprint. Beneficial impact would be lowest of the action alternatives due to lower power output.*	No emissions from vehicles, but no beneficial impacts from displacement of natural gas generation.	No emissions from vehicles, but no beneficial impacts from displacement of natural gas generation.	No emissions from vehicles, but no beneficial impacts from displacement of natural gas generation at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Archaeological and Built Environment	Potential impacts to one eligible resource (Hoover to San Bernardino Transmission Line).	Potential impacts to two eligible resources (Hoover to San Bernardino Transmission Line and STL-25).	Potential impacts to two eligible resources (Hoover to San Bernardino Transmission Line and STL-25).	Potential impacts to two eligible resources (Hoover to San Bernardino Transmission Line and STL-25).	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in

Table ES-1. Comparison of Impacts by Alternative

Resource	Alternative 1 Proposed Action	Alternative 2 2,385 Ac Alternative	Revised Alternative 3 1,685 Ac Alternative	Alternative 4 Reduced Acreage Alternative	Alternative 5 No Action Alternative	Alternative 6 No Project, Exclude Solar	Alternative 7 No Project, Approve Solar
							future project-specific analysis.
Environmental Justice	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Lands and Realty	Removal of 2,143 ac project area from other land uses. Impact on open routes to be addressed through re-routing around facility. Impact on Primm ROW would need to be resolved with Primm.	Removal of 2,385 ac project area from other land uses. Impact on open routes to be addressed through re-routing around facility. No impact on Primm ROW.	Removal of *1,685* ac project area from other land uses. Impact on open routes to be addressed through re-routing around facility. *Solar arrays would be configured to avoid conflict with Primm ROW.*	Removal of 1,766 ac project area from other land uses. Impact on open routes to be addressed through re-routing around facility. No impact on Primm ROW.	No impacts.	Reduction in types of land uses allowed on 2,143 ac project site. Continues current use of the land for grazing lease.	No impacts at this time. Continues current use of the land for grazing lease. Does not restrict future land uses on 2,143 ac project area. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Grazing	Reduction of *2,143 acres and 33 animal unit months (AUMs)*	*Reduction of 2,385 acres and 37 AUMs in existing grazing allotment.*	*Reduction of 1,685 acres and 27 AUMs in existing grazing allotment.*	*Reduction of 1,766 acres and 27 AUMs in existing grazing allotment.*	No impacts.	No impacts. Allotment would continue	No impacts at this time. Allotment would

Table ES-1. Comparison of Impacts by Alternative

Resource	Alternative 1 Proposed Action	Alternative 2 2,385 Ac Alternative	Revised Alternative 3 1,685 Ac Alternative	Alternative 4 Reduced Acreage Alternative	Alternative 5 No Action Alternative	Alternative 6 No Project, Exclude Solar	Alternative 7 No Project, Approve Solar
	in existing grazing allotment.					grazing at current level.	continue grazing at current level. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Mineral Resources	Removal of *2,143 ac* project area from potential mineral development.	*Removal of 2,385 acre project area from potential mineral development.*	*Removal of 1,685 acre project area from potential mineral development.*	*Removal of 1,766 acre project area from potential mineral development.*	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Noise	*Adverse impacts from heavy equipment and construction vehicles would be slightly lower than Alternative 2 due to smaller footprint.*	*Adverse impacts from heavy equipment and construction vehicles would be highest of any of the action alternatives due to largest acreage and bifurcated footprint.*	*Adverse impacts from heavy equipment and construction vehicles would be lowest of any of the action alternatives due to smallest acreage and use of mowing in site preparation.*	*Adverse impacts from heavy equipment and construction vehicles would be lower than Alternatives 1 and 2 due to smaller footprint, but still substantial due to site-wide grading and compaction.*	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Paleontological Resources	Potential impacts to unknown resources would	Potential impacts to unknown resources would be addressed through mitigation	Potential impacts to unknown resources would be addressed through mitigation	Potential impacts to unknown resources would be addressed through mitigation	No impacts.	No impacts.	No impacts at this time. Impacts associated

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Resource	Alternative 1 Proposed Action	Alternative 2 2,385 Ac Alternative	Revised Alternative 3 1,685 Ac Alternative	Alternative 4 Reduced Acreage Alternative	Alternative 5 No Action Alternative	Alternative 6 No Project, Exclude Solar	Alternative 7 No Project, Approve Solar
	be addressed through mitigation measures.	measures.	measures.	measures.			with a future project are speculative and would be considered in future project-specific analysis.
Public Health and Safety	*Adverse impacts related to worker safety and potential releases of hazardous material would be slightly lower than Alternative 2 due to smaller footprint and shorter construction duration.*	*Adverse impacts related to worker safety and potential releases of hazardous material during construction would be longer than Alternatives 1 and 4 due to longer duration of construction.*	*Adverse impacts related to worker safety and potential releases of hazardous material during construction would be highest of the action alternatives due to work occurring on more uneven ground with mowed vegetation.*	*Adverse impacts related to worker safety and potential releases of hazardous material would be slightly lower than Alternatives 1 and 2 due to smaller footprint and shorter construction duration.*	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Recreation	Modification of current open routes. Removal of 2,143 ac land area for recreation opportunities. Alt. 1 is furthest from land sailing on Ivanpah Dry Lake of the action alternatives.	Modification of current open routes, but different routes than Alt. 1. Removal of 2,385 ac land area for recreation opportunities. Directly adjacent to land sailing on Ivanpah Dry Lake.	Modification of current open routes, but different routes than Alt. 1. Removal of *1,685* ac land area for recreation opportunities. Directly adjacent to land sailing on Ivanpah Dry Lake.	Modification of current open routes, but different routes than Alt. 1. Removal of 1,776 ac land area for recreation opportunities. Directly adjacent to land sailing on Ivanpah Dry Lake.	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Social and Economic Issues	Beneficial employment and tax revenue impacts *would be slightly*	*Beneficial employment and tax revenue impacts would be highest of the action alternatives*	*Beneficial employment and tax revenue impacts would be lowest of the action alternatives*	*Beneficial employment and tax revenue impacts would be slightly higher than those in*	No beneficial employment and tax revenue impacts.	No beneficial employment and tax revenue impacts.	No beneficial employment and tax revenue impacts at

Table ES-1. Comparison of Impacts by Alternative

Resource	Alternative 1 Proposed Action	Alternative 2 2,385 Ac Alternative	Revised Alternative 3 1,685 Ac Alternative	Alternative 4 Reduced Acreage Alternative	Alternative 5 No Action Alternative	Alternative 6 No Project, Exclude Solar	Alternative 7 No Project, Approve Solar
	reduced from those in Alternative 2. No housing or public services impacts.	*due to longer construction duration.* No housing or public services impacts.	*due to shortest construction duration.* No housing or public services impacts.	*Alternative 3.* No housing or public services impacts.			this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Soil Resources	Adverse impact from ground disturbance over 2,143 ac. Probably permanent, despite plans for restoration.	Adverse impact from ground disturbance over 2,385 ac. Probably permanent, despite plans for restoration.	Adverse impact from ground disturbance over *1,685* ac. Probably permanent, despite plans for restoration.	Adverse impact from ground disturbance over 1,766 ac. Probably permanent, despite plans for restoration.	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Special Designations	No impacts from solar plant other than being visible from within some SMAs. Beneficial impact on SMAs by adjusting boundaries of Ivanpah DWMA to improve BLM's management capability.	No impacts from solar plant other than being visible from within some SMAs. Beneficial impact on SMAs by adjusting boundaries of Ivanpah DWMA to improve BLM's management capability.	No impacts from solar plant other than being visible from within some SMAs. Beneficial impact on SMAs by adjusting boundaries of Ivanpah DWMA to improve BLM's management capability.	No impacts from solar plant other than being visible from within some SMAs. Beneficial impact on SMAs by adjusting boundaries of Ivanpah DWMA to improve BLM's management capability.	No impacts.	*Beneficial impact on special management areas (SMAs) by adjusting boundaries of Ivanpah DWMA to improve BLM's management capability.*	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Transportation and Public Access	Increased traffic due to delivery of materials and	*Increased traffic due to delivery of materials and*	*Increased traffic due to delivery of materials and*	*Increased traffic due to delivery of materials and*	No impacts.	No impacts.	No impacts at this time. Impacts

Table ES-1. Comparison of Impacts by Alternative

Resource	Alternative 1 Proposed Action	Alternative 2 2,385 Ac Alternative	Revised Alternative 3 1,685 Ac Alternative	Alternative 4 Reduced Acreage Alternative	Alternative 5 No Action Alternative	Alternative 6 No Project, Exclude Solar	Alternative 7 No Project, Approve Solar
	commuting *would be slightly reduced compared to Alternative.*	*commuting would be highest of the action alternatives due to longest construction duration and bifurcated site.*	*commuting would be lowest of the action alternatives due to shortest construction duration.*	*commuting would be slightly higher than Alternative 3.*			associated with a future project are speculative and would be considered in future project-specific analysis.
Vegetation Resources	Adverse impact by removal of 2,023 ac of Mojave creosote bush scrub, 82 occurrences of special-status species, and 146 ac of CDFG jurisdictional drainages.	Adverse impact by removal of 2,327 ac of Mojave creosote bush scrub and 35 ac of Desert saltbush scrub, 59 occurrences of special-status species, and 178 ac of CDFG jurisdictional drainages.	Adverse impact by removal of *1,657* ac of Mojave creosote bush scrub and 28 ac of Desert saltbush scrub, 90 occurrences of special-status species, and *128* ac of CDFG jurisdictional drainages.	Adverse impact by removal of 1,690 ac of Mojave creosote bush scrub and 35 ac of Desert saltbush scrub, 53 occurrences of special-status species, and 130 ac of CDFG jurisdictional drainages.	No impacts.	No impacts.	No impacts from solar facility at this time. Future solar facility Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Visual Resources	Adverse impact by placing industrial-appearing facility and night lighting on currently undeveloped land *would be the lowest among the action alternatives due to furthest distance from I-15.*	*Adverse impact by placing industrial-appearing facility and night lighting on currently undeveloped land. Magnitude of the impact would be the highest of the action alternatives* due to placement of facility closer to viewers on Interstate 15 and Primm Valley Golf Course.	*Adverse impact by placing industrial-appearing facility and night lighting on currently undeveloped land. Magnitude of the impact would be the lowest of the action alternatives due to smallest footprint and greatest distance from the Primm Valley Golf Course.*	*Adverse impact by placing industrial-appearing facility and night lighting on currently undeveloped land. Magnitude of the impact would slightly higher than that of Alternative 3, due to slightly larger project acreage.*	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Water	*Groundwater*	*Groundwater use*	*Groundwater use*	*Groundwater use*	No impacts.	No impacts.	No impacts at

Table ES-1. Comparison of Impacts by Alternative

Resource	Alternative 1 Proposed Action	Alternative 2 2,385 Ac Alternative	Revised Alternative 3 1,685 Ac Alternative	Alternative 4 Reduced Acreage Alternative	Alternative 5 No Action Alternative	Alternative 6 No Project, Exclude Solar	Alternative 7 No Project, Approve Solar
Resources	*use would be the same for Alternatives 1, 2, and 3. Surface water hydrology impact due to grading and removal of vegetation would be the same as Alternatives 2 and 4.*	*would be the same for Alternatives 1, 2, and 3. Surface water hydrology impact due to grading and removal of vegetation would be the same as Alternatives 1 and 4.*	*would be the same for Alternatives 1, 2, and 3. Surface water hydrology impact would be the least among the action alternatives due to minimizing the amount of site grading and maintaining vegetation on large portions of the site.*	*would be lowest of the action alternatives due to using only a portion of the bifurcated site. Surface water hydrology impact due to grading and removal of vegetation would be the same as Alternatives 2 and 4.*			this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Wild Horse and Burro	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Wildland Fire	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Wildlife Resources	Adverse impact by displacement of a T&E species (desert tortoise) and other wildlife	Adverse impact by displacement of a T&E species (desert tortoise) and other wildlife (birds, insects,	Adverse impact by displacement of a T&E species (desert tortoise) and other wildlife (birds, insects,	Adverse impact by displacement of a T&E species (desert tortoise) and other wildlife (birds, insects,	No impacts.	*Beneficial impact from expansion of DWMA.*	No impacts from solar facility at this time. Impacts

Table ES-1. Comparison of Impacts by Alternative

Resource	Alternative 1 Proposed Action	Alternative 2 2,385 Ac Alternative	Revised Alternative 3 1,685 Ac Alternative	Alternative 4 Reduced Acreage Alternative	Alternative 5 No Action Alternative	Alternative 6 No Project, Exclude Solar	Alternative 7 No Project, Approve Solar
	(birds, insects, reptiles, mammals) from 2,143 ac area. Impacts to individuals and habitat. Potential impacts in larger area where tortoises would be translocated. Potential adverse impact by reducing connectivity for tortoise and other species. Beneficial impact from expansion of DWMA.	reptiles, mammals) from 2,385 ac area. Impacts to individuals and habitat. Potential impacts in larger area where tortoises would be translocated. Potential adverse impact by reducing connectivity for tortoise and other species. Beneficial impact from expansion of DWMA.	reptiles, mammals) from *1,685* ac area. Impacts to individuals and habitat. Potential impacts in larger area where tortoises would be translocated. Potential reduction of north-south connectivity is improved by including buffer between facility and Metamorphic Hill *and between facility and Stateline Hills.* Beneficial impact from expansion of DWMA.	reptiles, mammals) from 1,766 ac area. Impacts to individuals and habitat. Potential impacts in larger area where tortoises would be translocated. Potential adverse impact by reducing connectivity for tortoise and other species. Beneficial impact from expansion of DWMA.			associated with a future project are speculative and would be considered in future project-specific analysis.

1.0 Introduction and Project Overview

This *Proposed* Plan Amendment (PA) and *Final* Environmental Impact Statement/Environmental Impact Report (EIS/EIR) is a joint document published by the U.S. Department of the Interior Bureau of Land Management (BLM) and the County of San Bernardino, California (County) *pursuant to the Federal Land Policy and Management Act (FLPMA), the National Environmental Policy Act (NEPA), and the California Environmental Quality Act (CEQA).*

The PA and EIS/EIR analyzes the impacts of Desert Stateline, LLC's (Applicant's) proposed Stateline Solar Farm Project. The Applicant, a wholly-owned subsidiary of First Solar Development, Inc. (First Solar), has filed Application CACA #48669 for a Right-of-Way (ROW) authorization with the BLM to construct, operate, maintain, and decommission an approximately 2,143 acre (ac), 300-megawatt (MW) alternating current (AC) solar photovoltaic (PV) energy generation facility (Proposed Action or Project). The Proposed Action would include the PV generating facility, a 220-kilovolt (kV) generation interconnection (gen-tie) transmission line, operations and maintenance facilities, and a site access road. All of the proposed facilities would be located on public lands managed by the BLM Needles Field Office. The location of the proposed facility within its regional context is shown in Figure 1-1 (See Appendix A for all figures referenced in the PA and EIS/EIR). The proposed facility would be located in Ivanpah Valley near the California-Nevada border. The proposed location is approximately 2 miles southwest of the community of Primm, Nevada, and approximately 0.5 miles to the west of Interstate 15 (I-15). The proposed site layout is shown in Figure 1-2.

This PA and EIS/EIR analyzes:

1) The impacts of BLM approving a ROW grant for the construction, operations and maintenance, and decommissioning of the Project and associated amendment to the California Desert Conservation Area Plan 1980 (CDCA Plan; BLM 1980);
2) The impacts of three alternative configurations of the Project, and three additional alternative land use plan amendments;
3) *The impacts of the no action alternative;*
4) The impacts of the approval of well permits by the County; and
5) Mitigation measures that, if adopted, would avoid, minimize, or mitigate the adverse environmental impacts identified.

In addition, the EIS/EIR also evaluates the following potential land management planning and implementation decisions that may need to be made with respect to resources within the Ivanpah Valley should a ROW grant be approved for the Project either as proposed or modified by the alternatives herein, including the modification by BLM of the:

- Boundaries of the existing Ivanpah Desert Wildlife Management Area (DWMA) by adding the Northern Ivanpah Valley Unit to the existing DWMA; and
- Configuration of open routes within the footprint of the ROWs being considered for the project.

The full range of decisions to be made as a component of each of the alternatives being analyzed is summarized in Table 1-1. A detailed description of each of the potential decisions and actions, and their development into alternatives, is presented in Chapter 2.

Table 1-1. Decisions Associated with Various Alternatives

Decision to be Made by Agencies	Action Alternatives				No Action/No Project Alternatives		
	Alternative 1 Proposed Action	Alternative 2 2,385 ac Alternative	***Revised*** Alternative 3 ***1,685*** ac Alternative	Alternative 4 Reduced Acreage Alternative	Alternative 5 No Action Alternative	Alternative 6 No Project, Exclude Solar	Alternative 7 No Project, Approve Solar
Issue ROW for 2,143 ac	X						
Issue ROW for 2,385 ac		X					
Issue ROW for 1,685 ac			X				
Issue ROW for 1,766 ac				X			
Amend CDCA Plan to identify site as suitable for future solar development	X	X	X	X			*X*
Modify boundary of Ivanpah DWMA	X	X	X	X		*X*	
Modify open routes	X	X	X	X			
Approve well permits	X	X	X	X			
Amend CDCA Plan to identify site as unsuitable for solar development						X	

In compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), the BLM and the County prepared this EIS/EIR to inform the public about the Proposed Action and to meet the need of federal, state, and local permitting agencies in considering the Proposed Action. Because the BLM's authorization of a ROW grant for the project would require an amendment to the CDCA Plan, the PA and EIS/EIR also satisfies the applicable requirements under the Federal Land Policy and Management Act (FLPMA) and BLM's land use planning regulations. The information contained in this EIS/EIR will be considered by the BLM in its deliberations regarding approval of the ROW grant and associated CDCA Plan Amendment and may also be considered by the other agencies with regard to their respective permits, including the County, and other federal, state, and local agencies.

Project Refinements after Initial Application Filing and after Publication of the NOI/NOP

The initial application for a ROW grant for a solar facility on the proposed site was made by OptiSolar, Inc. (OptiSolar) in December, 2006, for a grant covering 4,160 ac (First Solar 2012). In September, 2008, OptiSolar filed a Plan of Development (POD) describing their proposed 6,400 ac, 380 MW solar facility using OptiSolar's PV technology (OptiSolar 2008). At that time, the entire 6,400 ac area was surveyed to identify biological resources.

In April, 2009, OptiSolar became a wholly-owned subsidiary of First Solar. First Solar filed a Draft POD for their preferred project in April, 2010. In that POD, the proposal was for a 300 MW facility encompassing approximately 3,011 ac, and using First Solar's thin film cadmium telluride (CdTe) PV technology.

A revised POD was submitted by First Solar in September, 2010 (First Solar 2010). The revised POD evaluated a Project Study Area of 5,518 ac, and proposed three potential site configurations within that Project Study Area.

In August, 2011, BLM published a Notice of Intent (NOI) to prepare an Environmental Impact Statement under NEPA, and the County published a Notice of Preparation (NOP) for an Environmental Impact Report under CEQA. The project scoping meeting was held on August 31, 2011, with the public scoping continuing through September 23, 2011.

The most recent revised POD was submitted on August 17, 2011 by the Applicant (First Solar 2011). This POD proposed a Project Study Area of approximately 5,850 ac. In this POD, the Project Study Area shifted slightly to the south and east to avoid resources identified during initial surveys. The original Project Study Area and the current Project Study Area together comprise 6,400 ac. Based on the results of the inventories, the Applicant eliminated two potential site configurations, and added an additional configuration for consideration.

During the BLM's and the County's review of the associated technical reports, the agencies' technical staff worked with the Applicant to consider further modified configurations as alternatives to reduce adverse impacts. *Based on further engineering development, as well as public comments on the Draft EIS/EIR, the most recent revised POD was submitted by the Applicant on May 29, 2013. This POD proposed a revised project configuration comprising 1,685 ac, but still generating 300 MW. This area is within the footprint of the area that was previously analyzed in the Draft EIS/EIR as Alternative 3, so is incorporated into this Final EIS/EIR as Revised Alternative 3*.

1.1 Purpose and Need

1.1.1 BLM Purpose and Need

NEPA guidance published by the Council on Environmental Quality (CEQ) states that the Purpose and Need section of an Environmental Impact Statement "shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action" (40 Code of Federal Regulations [CFR] §1502.13). The following discussion sets forth the purpose of and need for the project as required under NEPA.

In accordance with FLPMA (Sections *102(a)(7), 302(a), and 601*), public lands are to be managed for multiple uses that take into account the long-term needs of future generations for renewable and non-renewable resources. The Secretary of the Interior is authorized to grant ROWs on public lands for systems of generation, transmission, and distribution of electric energy (Section 501(a)(4)). Taking into account the BLM's multiple use mandate, the purpose and need for the Proposed Action is to respond to a FLPMA ROW application submitted by the Applicant to construct, operate, maintain, and decommission a solar energy-generating facility and associated infrastructure on public lands administered by the BLM in accordance with FLPMA, BLM ROW regulations, and other applicable Federal laws and policies.

In conjunction with FLPMA, the Proposed Action would, if approved, assist the BLM in addressing the following management objectives:

- Executive Order 13212, dated May 18, 2001, which mandates that agencies act expediently and in a manner consistent with applicable laws to increase the production and transmission of energy in a safe and environmentally sound manner."
- Secretarial Order 3285, dated March 11, 2009, and amended as 3285A1 on February 22, 2010, which "establishes the development of renewable energy as a priority of the Department of the Interior."
- *The President's Climate Action Plan, announced on June 25, 2013, to reduce carbon pollution, prepare the U.S. for the impacts of climate change, and lead international efforts to address global climate change. To ensure America's continued leadership in clean energy, the Climate Action Plan set a new goal for the Department of the Interior to permit enough renewable electricity generation from public lands to power more than 6 million homes by 2020. This goal will require the approval of 20,000 MWs of renewable energy projects on the public lands by 2020.*

The BLM will decide whether to deny the proposed ROW, grant the ROW, or grant the ROW with modifications. The BLM may include any terms, conditions, and stipulations it determines to be in the public interest, and may include modifying the proposed use or changing the route or location of the proposed facilities (43 CFR 2805.10(a)(1)).

In connection with its decision on the Proposed Action, the BLM will also consider potential amendments to the CDCA Plan. The CDCA plan, while recognizing the potential compatibility of solar energy facilities on public lands, requires that all sites associated with power generation or transmission not identified in the plan be considered through the land use plan amendment process. BLM policy encourages the avoidance of development on lands with high conflict or sensitive resource values (Instruction Memorandum [IM] 2011-061). While the BLM is not required to formally determine whether certain high conflict lands are or are not suitable for solar energy development, if BLM decides to make that decision, it must amend the CDCA plan. Here, the BLM is potentially deciding whether to amend the CDCA plan to identify the Project site as suitable or unsuitable for solar energy development. At the same time, the BLM will also

decide whether to amend the CDCA plan to make high conflict or sensitive resource value areas within the project application area unavailable for solar development.

1.1.2 San Bernardino County Purpose and Need

As part of the Proposed Action, the Applicant has submitted well construction permits to the County for up to two groundwater production wells and three groundwater monitoring wells. The wells would be used to produce groundwater for dust suppression, fire response during construction, and for fire response and sanitary purposes during operations. Issuing the well permits is a discretionary action on the part of the County, and therefore warrants CEQA review.

1.1.3 Applicant's Objectives

The purpose and need describes BLM and the County's purpose and need for the Proposed Action, not the Applicant's interests and objectives. However, the Applicant's interests and objectives, including any constraints or flexibility with respect to their proposal, help to inform the BLM's and County's decisions and cannot be ignored in the NEPA and CEQA process. This information helps the BLM and County to determine which project alternatives are feasible for purposes of detailed analysis as part of the NEPA and CEQA processes. This information also helps inform the determination that certain alternatives are unreasonable and thus eliminated from detailed analysis (BLM IM 2011-059).

The Applicant's stated purpose for the project is to create a clean, renewable source of electricity that helps meet California's growing demand for power and helps fulfill national and state renewable energy goals and greenhouse gas (GHG) emissions reduction requirements. The state's Renewable Portfolio Standard (RPS) and GHG emissions reduction requirements include the requirements set forth in Senate Bills (SB) 1078 and X1-2 (California RPS Program), Assembly Bill (AB) 32 (California Global Warming Solutions Act of 2006), and the Governor's Executive Order S-14-08 to increase the state's Renewable Energy Standard to 33 percent renewable power by 2020. In particular:

- California's RPS mandate requires the state's Investor-Owned Utilities (IOUs) to supply 33 percent of California's total electricity through renewable energy generation by 2020, as set forth in SB 1078 (establishing the California RPS Program) and SB X1-2 (accelerating the requirement to 33 percent requirement to 2020).
- California's GHG emission reduction goals set forth in AB 32 require the state's GHG emissions to be reduced to 1990 levels by 2020.

The Applicant's specific objectives for the project, as stated in their Plan of Development (First Solar 2013) are:

- Deploy a technology that has been commercially proven and that is safe, readily available, environmentally responsible, and acceptable to the public utilities;
- Establish 300 MW of generating capacity for emission-free PV solar electricity in an area of high solar insolation and in proximity to existing transmission infrastructure, while avoiding, minimizing, and mitigating the impacts to environmentally sensitive areas;
- Develop a project that is feasible to construct and operate while providing utility customers with a cost-competitive, cleaner alternative to conventionally generated electricity;

- Provide community benefits through new jobs, spending in local businesses, and additional sales tax revenues;
- Employ an average of approximately 400 on-site workers during the 2 to 4 year construction period;
- Interconnect to the newly upgraded El Dorado-Ivanpah transmission line, which is located in a federally-designated transmission corridor near the project site; and
- Generate electricity in an arid environment with minimal water use.

1.2 General Location and Map

The proposed facility would be a 300 MW solar energy facility located on approximately 2,143 ac in eastern San Bernardino County, California (Figure 1-1). The proposed facility would be located entirely on BLM-administered lands in Ivanpah Valley, approximately 2 miles south of the California-Nevada border, and 0.5 miles west of I-15.

As shown on Figure 1-2, the proposed facility would consist of a single 2,143 ac area which would be used to place arrays of solar panels. The project would be located approximately 2 miles from the Southern California Edison (SCE) Ivanpah Substation, and would connect to the substation through a 2.3 mile 220 kV gen-tie transmission line. The gen-tie line would also be located on BLM land, and would be included within the ROW for the solar facility. The Ivanpah Substation is also located on BLM land, but is authorized under a separate ROW. Access to the site would use the Yates Well Road exit from I-15, following a 40-foot wide, 1.7 mile long gravel road to the facility entrance.

The proposed solar facility would be located near other developed areas within Ivanpah Valley. The facility would be near the eastern boundary of the Ivanpah Solar Electric Generating System (Ivanpah SEGS, which is currently under construction), and approximately 1 mile north of the Primm Valley Golf Course. Three casino/hotels, apartments, and associated restaurants and gas stations are located in Primm, NV, approximately 3 miles to the northeast of the proposed facility. The Molycorp Minerals, LLC rare earth metals mine, which is currently expanding operations, is located approximately 8 miles west of the proposed facility.

The proposed facility would be located within the boundaries of designated utility corridors in BLM's CDCA Plan (see Figure 1-3). At the location where I-15 crosses the California-Nevada border, two branches of Corridor BB and Corridor D converge. Corridor BB in this location is also designated as the West-Wide Energy Corridor 225-27. The proposed facility would be located entirely within the footprint of these corridors where they converge on the north side of the golf course.

The utility corridor on the northern boundary of the proposed site (Corridor D) includes a natural gas transmission line operated by Kern River Gas Transmission (Kern River), as well as power transmission lines operated by the Los Angeles Department of Water and Power (LADWP) and the Intermountain Power Agency. The utility corridor on the southern boundary of the proposed site (Corridor BB) includes power transmission lines operated by LADWP and SCE. The gen-tie line proposed as part of the Proposed Action would be placed within Corridor BB.

The proposed site is located near, but not within, several special land use areas. The facility would be visible from locations within the Mojave National Preserve (administered by the National Park Service [NPS]), Ivanpah DWMA, Clark Mountain Area of Critical Environmental Concern (ACEC), Stateline Wilderness, and Mesquite Wilderness. The facility is located within the boundaries of the Clark Mountain Grazing Allotment.

1.3 Agency Roles and Authorizations

The primary authorizing laws and regulations are summarized below, by agency.

1.3.1 Bureau of Land Management

Solar Facility ROW Grant

The BLM's authority, policies, and guidance for making decisions related to the Proposed Action flow from:

- Title V of the FLPMA (43 United States Code [U.S.C.] 1701, et. seq.,) which authorizes BLM to issue ROW grants for systems for generation, transmission, and distribution of electric energy;
- Section 211 of the EPAct (119 Stat. 594, 600), which *sets forth the "sense of Congress"* that the Secretary of the interior should seek to have approved a minimum of 10,000 MW of renewable energy generating capacity on public lands by 2015;
- BLM's Solar Energy Development Policy provided in IM 2011-003 (dated October 7, 2010), as clarified in IM 2011-059 (NEPA Compliance for Utility-Scale Renewable Energy Right-of-Way Authorizations, February 7, 2011), IM 2011-060 (Solar and Wind Energy Applications – Due Diligence, February 7, 2011), and IM 2011-061 (Solar and Wind Energy Applications – Pre-Application and Screening, February 7, 2011); and
- Secretarial Order 3285 (dated March 11, 2009), and amended as 3285A1 on February 22, 2010.

Section 3.1 of the BLM NEPA Handbook specifies that, as a Federal agency, the BLM must meet NEPA requirements whenever a BLM decision would result in an effect on the human environment. Section 3.3 of the handbook states that, as part of considering a proposal submitted to the BLM by others, the agency must determine if the proposal is in conformance with the Land Use Plan (LUP), and determine what level of NEPA documentation is required. The process used to determine the level of NEPA documentation required is outlined in Figure 1.1 of the handbook and, in the case of this application, BLM determined that an EIS was the appropriate level of NEPA documentation to evaluate the effects of the proposed ROW grant.

Plan Amendment

The resource management plan covering the Proposed Action is the BLM's CDCA Plan of 1980, as amended. The Project Study Area is within the planning area designated under a 2002 amendment to the CDCA Plan—the Final California Desert Conservation Area Plan Amendments for the Northern and Eastern Mojave Desert Planning Area (NEMO). In the CDCA Plan and NEMO amendment, the location of the Proposed Action includes land that is classified as Multiple Use Class L (Limited Use). Chapter 3 (Energy Production and Utility Corridors Element) of the CDCA Plan, as amended, requires that newly proposed power generation sites that are not already identified in the Plan be considered through the plan amendment process. The application area is not identified within the Plan and, therefore, a plan amendment is required to include the area as a recognized *site* within the Plan and to determine the suitability of the application area for solar development.

In response to the application, BLM has also identified a need to consider modification of the boundaries of the currently-existing Ivanpah DWMA in order to provide additional protection to resources in the project area. This action also requires an amendment to the CDCA Plan.

This EIS acts as the mechanism for complying with NEPA and CDCA requirements for both proposed plan amendments.

1.3.2 U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction to protect threatened and endangered species under the federal Endangered Species Act (ESA) [16 U.S.C Section 1531 et. seq.]. Formal consultation with the USFWS under Section 7 of the ESA is required for any federal action that may adversely affect a federally-listed species. This consultation associated with the proposed ROW grant for a solar facility has been initiated through a request by BLM to initiate formal consultation and the submittal of a Biological Assessment (BA).

USFWS completed consultation by issuing the Biological Opinion for the Project on September 30, 2013. The Biological Opinion was developed jointly for the Stateline project and the nearby Silver State South project, in order to consider the effects of both projects. The Biological Opinion concluded that the Proposed Actions are not likely to appreciably diminish reproduction, numbers, or distribution of the tortoise in Ivanpah Valley, and would not affect desert tortoises within the remainder of the Eastern Mojave Recovery Unit or the remainder of the range of the Mojave population of the desert tortoise.

1.3.3 San Bernardino County

Under Memorandum of Understanding (MOU) Agreement No. 03-1211 between BLM and the County, facilities requiring groundwater wells fall under the County's jurisdiction, and would therefore be required to comply with County Ordinance No. 3872 regarding permitting and monitoring of groundwater extraction wells. Because the Proposed Action would include installation of groundwater extraction wells, implementation of the proposed facility would require discretionary approval from the County with respect to issuance of well permits from the Environmental Health Services Department. Because the County must take a discretionary action, the County will be responsible for certifying the Final EIS/EIR after reviewing the document for consistency with CEQA requirements (CEQA Guidelines §15090). If the Final EIS/EIR demonstrates that the Proposed Action would have significant and unavoidable (not mitigable) impacts and the County decides to approve the project, then the County will need to adopt a "Statement of Overriding Considerations" explaining the reasons for approving the project despite its significant impacts (CEQA Guidelines §15093).

1.3.4 California Department of Fish and Wildlife

The California Department of Fish and Wildlife (CDFW, formerly Department of Fish and Game [CDFG]) has the authority to protect water resources of the state through regulation of modifications to streambeds, under Section 1602 of the Fish and Game Code. The BLM and the Applicant have provided information to CDFW to assist in their determination of the impacts to streambeds, and identification of permit and mitigation requirements.

The CDFW is a trustee agency that has jurisdiction over CEQA projects that involve fish and wildlife, rare and endangered native plants, wildlife areas, and ecological reserves. Although CDFW does not have authority to approve or disapprove of the Proposed Action, the County, as the lead CEQA agency, is required to consult with CDFW. The CDFW *has commented* on this EIR, and *has made* recommendations regarding those resources over which it has jurisdiction.

1.4 Policy Consistency and Land Use Plan Conformance

1.4.1 Relationship of Proposed Action to BLM Policies, Plans, and Programs

1.4.1.1 Federal Land Policy and Management Act of 1976

FLPMA provides the BLM's overarching mandate to manage the public lands and resources under its stewardship under the principles of multiple use and sustained yield. Multiple-use is defined as: "a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources" (FLPMA §103(c)). FLPMA requires the BLM to develop, maintain, and, when appropriate, revise land use plans for public lands. (FLPMA §202(a)). In processing a land use plan amendment, BLM must comply with the BLM Planning Regulations (43 Federal Register [FR] Part 1600) and the BLM Land Use Planning Handbook (H-1601-1; March 2005).

1.4.1.2 California Desert Conservation Area (CDCA) Plan

The CDCA encompasses 25 million acres of land in Southern California, and was designated by Congress in 1976 through the FLPMA. The BLM manages approximately 10 million acres of the CDCA. Congress directed the BLM to prepare and implement a comprehensive, long-range plan for the management, use, development, and protection of public lands within the CDCA. The CDCA Plan, as amended, is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The CDCA Plan provides overall regional guidance for management of the public lands within the CDCA and establishes long-term goals for protection and use of the CDCA.

The CDCA Plan establishes four multiple use classes (MUCs), MUC guidelines, and plan elements for specific resources or activities such as motorized-vehicle access, recreation, vegetation, and utility corridors. The multiple use classes are:

- Class C (Controlled Use). About four million acres are Class C. These include 69 wilderness areas (3,667,020 ac) created by Congress with the October 1994 passage of the California Desert Protection Act. These lands are to be preserved in a natural state; access generally is limited to nonmotorized, nonmechanized means – on foot or horseback.
- Class L (Limited Use). About four million acres are Class L. These lands are managed to protect sensitive, natural, scenic, ecological, and cultural resource values. They provide for generally lower-intensity, carefully controlled multiple uses that do not significantly diminish resource values.
- Class M (Moderate Use). About 1.5 million acres are Class M. These lands are managed in a controlled balance between higher-intensity use and protection. A wide variety of uses such as mining, livestock grazing, recreation, energy, and utility development are allowed. Any damage that permitted uses cause must be mitigated.
- Class I (Intensive Use). About 500,000 ac are Class I. These lands are managed for concentrated use to meet human needs. Reasonable protection is provided for sensitive natural values and mitigation of impacts, and impacted areas are rehabilitated when possible.

The location of the proposed facility is classified as MUC L. The Plan states that solar energy facilities may be allowed within Class L areas after NEPA requirements are met. Because solar energy facilities are an allowable use of the land as classified in the CDCA Plan, the Proposed Action does not conflict with the CDCA Plan. However, Chapter 3, "Energy Production and

Utility Corridors Element" of the CDCA Plan requires that newly proposed power facilities that are not already identified in the CDCA Plan be considered through the Plan Amendment process. Since the proposed solar facility is not currently identified within the CDCA Plan, a plan amendment is required to include the facility ***site*** within the CDCA Plan. This PA and EIS/EIR will act as the mechanism for complying with the NEPA and Land Use Plan amendment requirements of the CDCA Plan relevant to the Proposed Action.

As presented in Table 1-1, the plan amendment process is also being used within this EIS/EIR to evaluate the proposed modification of the boundaries of the currently-existing Ivanpah DWMA.

Planning Criteria (BLM)

The CDCA Plan planning criteria are the constraints and ground rules that guide and direct the development of the PA. They ensure that the PA is tailored to the identified issues and ensure that unnecessary data collection and analyses are avoided. They focus on the decisions to be made in the PA to achieve the following:

"Sites associated with power generation or transmission not identified in the Plan will be considered through the Plan Amendment process."

Because the site for the proposed facility is not currently identified within the CDCA Plan, an amendment to identify the proposed facility within the CDCA Plan is hereby proposed. A Plan Amendment is also required for the associated management action of modifying the boundary of a DWMA.

As specified in Chapter 7 of the CDCA Plan, "Plan Amendment Process", there are three categories of Plan Amendments, including:

- Category 1, for proposed changes that will not result in significant environmental impact or analysis through an Environmental Impact Statement;
- Category 2, for proposed changes that would require a significant change in the location or extent of a multiple-use class designation; and
- Category 3, to accommodate a request for a specific use or activity that will require analysis beyond the Plan Amendment Decision.

Based on these criteria, approval of the proposed facility and modified DWMA boundaries would each require a Category 3 amendment. The section below summarizes the procedures necessary to evaluate the proposed PA, as well as the procedures required to perform the environmental review of the ROW application.

Plan Amendment Process

The Plan Amendment process is outlined in Chapter 7 of the CDCA Plan. In analyzing an applicant's request for amending or changing the CDCA Plan, the BLM District Manager will:

1. Determine if the request has been properly submitted and if any law or regulation prohibits granting the requested amendment.
2. Determine if alternative locations within the CDCA are available which would meet the applicant's needs without requiring a change in the Plan's classification, or an amendment to any Plan element.

3. Determine the environmental effects of granting and/or implementing the applicant's request.
4. Consider the economic and social impacts of granting and/or implementing the applicant's request.
5. Provide opportunities for and consideration of public comment on the proposed amendment, including input from the public and from federal, State, and local government agencies.
6. Evaluate the effect of the proposed amendment on BLM management's desert-wide obligation to achieve and maintain a balance between resource use and resource protection.

Decision Criteria for Evaluation of Proposed Plan Amendment

The Decision Criteria to be used for approval or disapproval of the proposed amendment require that the following determinations be made by the BLM Desert District Manager:

1. The proposed amendment is in accordance with applicable laws and regulations; and
2. The proposed amendment will provide for the immediate and future management, use, development, and protection of the public lands within the CDCA.

The BLM Desert District Manager will base the rationale for these determinations on the principles of multiple use, sustained yield, and maintenance of environmental quality as required in FLPMA.

Decision Criteria for Evaluation of Application

In addition to defining the required analyses and Decision Criteria for plan amendments, the CDCA Plan also defines the Decision Criteria to be used to evaluate future applications in the Energy Production and Utility Corridors Element of Chapter 3. These Decision Criteria include:

1. Minimize the number of separate rights-of-way by utilizing existing rights-of-way as a basis for planning corridors;
2. Encourage joint-use of corridors for transmission lines, canals, pipelines, and cables;
3. Provide alternative corridors to be considered during processing of applications;
4. Avoid sensitive resources wherever possible;
5. Conform to local plans whenever possible;
6. Consider wilderness values and be consistent with final wilderness recommendations;
7. Complete the delivery systems network;
8. Consider ongoing projects for which decisions have been made; and
9. Consider corridor networks which take into account power needs and alternative fuel resources.

The BLM will include a statement in the Record of Decision evaluating these criteria based on the information contained in this EIS and on comments received during the public comment period on the Draft EIS.

1.4.1.3 Final Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States

On October 12, 2012, Secretary Salazar signed the Record of Decision (ROD) for the Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States (Solar PEIS). The BLM's purpose and need in developing the Solar PEIS was to respond in an efficient and effective manner to the high interest in siting utility-scale solar energy development on public lands and to ensure consistent application of measures to mitigate the impacts of solar energy development. To accomplish this, the ROD selected an alternative that amends BLM land use plans and categorizes BLM-managed public lands into:

- *Areas that are well-suited for utility-scale solar energy production (identified as Solar Energy Zones [SEZs]);*
- *Areas excluded from future solar development; and*
- *Variance areas, in which solar applications may be considered under a defined variance process on a case-by-case basis.*

In addition to defining these areas and the required process for considering applications within the SEZs and variance areas, the Solar PEIS also prescribed programmatic design features for all proposed solar projects, and committed to developing a long-term solar monitoring and adaptive management plan and regional mitigation plan. The programmatic design features, long-term solar monitoring and adaptive management plan, and regional mitigation plan are intended to avoid, minimize, and—if necessary—offset impacts from proposed solar projects.

The ROD and associated land use plan amendments analyzed in the Solar PEIS do not apply to pending applications for utility-scale solar energy development on BLM-administered lands. The BLM defines "pending" applications as any applications (regardless of place in line) filed within proposed variance and/or exclusion areas before the publication of the Supplement to the Draft Solar PEIS (October 28, 2011) and any applications filed within proposed SEZs before June 30, 2009. Pending applications are not subject to any decisions adopted by the Solar PEIS ROD. The BLM will process pending solar applications consistent with land use plan decisions in place prior to amendment by the Solar Programmatic EIS ROD. Amendments to pending applications would also not be subject to the decisions adopted by the Solar PEIS ROD provided they meet the criteria identified in Appendix B, Section B.3 of the Solar PEIS. Appendix B, Section B.3 of the Solar PEIS identifies the Stateline project as a pending project.

Although the Solar PEIS ROD categorizes the area surrounding the project site as an exclusion area, the Solar PEIS classifies the Stateline Solar Project as a "pending" project. Therefore, it is not subject to the decision in the Solar PEIS ROD to exclude that area from utility-scale solar energy development. Consistent with the Solar PEIS ROD, this project will be processed under the land use plan decisions in place prior to the adoption of the Solar PEIS ROD, as described in Section 1.4.1.2 above. This EIS uses site-specific information to analyze direct, indirect, and cumulative effects of the proposed project and alternatives to provide the Authorized Officer with the needed analysis to make a decision on the project and associated CDCA Plan Amendment.

The Draft EIS considered two No Project/CDCA Plan Amendment alternatives—Alternative 6 and Alternative 7. Under Alternative 6, the BLM would not approve the Applicant's ROW grant application and would amend the CDCA Plan to identify the project area as suitable for solar energy development. Under Alternative 7, the BLM would not approve the Applicant's ROW grant application and would amend the CDCA Plan to identify the project area as unsuitable for solar energy development. Because of the decisions made by the Solar PEIS ROD, which would control if this "pending" project were not approved, Alternatives 6 and 7 in the Draft EIS are no longer feasible or necessary to direct the future suitability of this site for solar development. Should this "pending" project not be approved, the Solar PEIS ROD's decision to

exclude the project area from solar energy development would control. However, Alternatives 6 and 7 were fully analyzed in the Draft EIS, and public comments were made regarding their impacts and desirability. In addition, a plan amendment is necessary to modify the DWMA boundaries even if the BLM denies the ROW application, and this is a component of Alternative 6. Therefore, the analyses of Alternatives 6 and 7 remain in this Final EIS.

1.4.1.4 California Desert Renewable Energy Conservation Plan

The California Desert Renewable Energy Conservation Plan (DRECP) is a landscape-level planning effort currently underway in California. The DRECP covers approximately 22.5 million acres of federal and nonfederal land in the Mojave and Colorado (Sonoran) Deserts in southern California. The purpose of the DRECP is to advance federal and state species and ecosystem conservation goals, while also facilitating the timely permitting of renewable energy projects. The DRECP *may* include potential amendments to the CDCA Plan and other BLM land use plans, and a Habitat Conservation Plan developed in accordance with the Endangered Species Act and a Natural Communities Conservation Plan developed in accordance with the California Natural Communities Conservation Planning Act. Based on these considerations, the DRECP may serve as the basis for the BLM's identification of priority areas for renewable energy development (Development Focus Areas, to include other renewable energy types other than solar), modify the PEIS's SEZs, and/or identifying additional development exclusion areas. At this time, a Draft EIS for the DRECP has not been published. And while the DRECP includes potential land use plan amendments to the CDCA Plan, existing land use plan decisions remain in effect during the BLM's consideration of those Plan amendments and until a final decision is made on them (BLM Land Use Planning Handbook H-1601-1; March 2005 page 47). Therefore, the BLM is evaluating the Applicant's ROW grant application under existing CDCA Plan requirements/criteria, as detailed in Section 1.4.1.2 above.

1.4.2 Relationship of Proposed Action to non-BLM Policies, Plans, and Programs

1.4.2.1 Relationship to Federal Plans, Policies, Programs, and Laws

National Environmental Policy Act

NEPA (42 U.S.C. 4321 et. seq.) declares a continuing federal policy that directs "a systematic, interdisciplinary approach" to planning and decision-making. NEPA requires the preparation of environmental statements for "major Federal actions significantly affecting the quality of the human environment." The CEQ's Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508) require Federal agencies to identify and assess reasonable alternatives to proposed actions. Federal agencies are further directed to emphasize significant environmental issues in project planning and to integrate impact studies required by other environmental laws and Executive Orders into the NEPA process. In processing ROW applications, BLM must also comply with the Department of the Interior's regulations applicable to implementing the procedural requirements of NEPA (43 CFR Part 46), as well as BLM's NEPA Handbook (H-1790-1; January 2008).

Clean Air Act

The Clean Air Act (CAA) (42 U.S.C. 7401-7661), as amended, regulates air pollution to improve air quality. It regulates air emissions from area, stationary, and mobile sources. This law also authorizes the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards to protect public health and the environment. In addition, Section 309 of the

CAA directs the EPA to review proposed actions of federal agencies in accordance with NEPA, and to make those reviews public. Under Section 309, EPA provides comments on NEPA documentation and, if sufficient revisions are not made, EPA may refer the matter to the CEQ for mediation.

Clean Water Act

The Clean Water Act (CWA) (33 U.S.C. 1251-1376) provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Section 401 requires that an applicant for a Federal license or permit that allows activities resulting in a discharge to waters of the U.S. must obtain a certification that the discharge complies with other provisions of the CWA. The Regional Water Quality Control Boards (RWQCBs) administer the certification program in California. Section 402 establishes a permitting system for the discharge of any pollutant (except dredge or fill material) from a point source into waters if the U.S. Section 404 establishes a permit program administered by the U.S. Army Corps of Engineers (USACE) to regulate the discharge of dredged or fill material into waters of the U.S., including wetlands. The CWA also contains the requirements under which the RWQCBs set water quality standards for all contaminants in surface waters.

Endangered Species Act of 1973

The ESA (16 U.S.C. 1531-1543) and subsequent amendments provide guidance for the conservation of endangered and threatened species and the ecosystems upon which they depend. The USFWS administers the ESA. The major components of the ESA are:

- Provisions for the listing of threatened and endangered species;
- The requirement for consultation with the USFWS on Federal projects that may affect listed species or their habitat;
- Prohibitions against "take" of listed species. Under ESA, the definition of "take" is to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt to engage in any such conduct;" and
- Provisions for permits to allow the incidental taking of threatened and endangered species.

National Historic Preservation Act of 1966, as Amended

The National Historic Preservation Act (NHPA) (16 U.S.C. 470) requires Federal agencies with jurisdiction over a proposed Federal project to take into account the effect of the undertaking on historic properties listed or eligible for listing on the National Register of Historic Places, and requires that the agencies afford the State Historic Preservation Office (SHPO), any affected Indian tribe, the Advisory Council on Historic Preservation, and the public with an opportunity to comment on the undertaking.

1.4.2.2 Relationship to State and Local Laws, Plans, Policies, and Programs

California Environmental Quality Act

Under the provisions of the CEQA, the purpose of an environmental impact report is "to identify the significant effects on the environment of a project, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided." (Public

Resources Code Section 21002.1[a]). The intentions of CEQA are to: (1) inform governmental decision-makers and the public about the potentially significant environmental effects of proposed activities, (2) identify the ways that environmental damage can be avoided or significantly reduced, (3) prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible, and (4) disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved (State CEQA Guidelines Section 15002: Public Resources Code Section 21002.1).

California Endangered Species Act

The CESA (Fish and Game Code 2050 et. seq.) established the policy of the State to conserve, protect, restore, and enhance threatened or endangered species and their habitats. CESA mandates that State agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. There are no State agency consultation procedures under CESA. For projects that affect a species that is both State and Federally listed, compliance with the Federal ESA will satisfy CESA if the CDFW determines that the Federal incidental take authorization is consistent with CESA under Fish and Game Code Section 2080.1 and issues a Consistency Determination to that effect. For projects that will result in a take of a State-only listed species, an applicant must apply for a take permit under Section 2081(b).

California Fish and Game Code, Streambed Alteration Agreements

Sections 1601 to 1603 of the California Fish and Game Code require notifying CDFW prior to constructing any project that would divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake. Preliminary notification and project review generally occur during the environmental review process. When an existing fish or wildlife resource may be substantially adversely affected, the CDFW is required to propose reasonable project changes and/or mitigation to protect the resource. These notifications are formalized in a Streambed Alteration Agreement that becomes part of the plans, specifications, and bid documents for the project.

State Historic Preservation Officer

The California SHPO reviews state programs and projects that may impact historical resources that are located on state-owned land pursuant to California Public Resources Code §5024 and 5024.5. *The California SHPO also advises and assists the BLM in carrying out its responsibilities under Section 106 of the NHPA.*

California's Renewable Portfolio Standard

California's RPS requires IOUs, publicly-owned utilities, and energy service providers to increase purchases of renewable energy such that at least 33 percent of retail sales are procured from renewable energy resources by December 31, 2020. In the interim, each entity is required to procure an average of 20 percent of renewable energy for the period January 1, 2011, through December 31, 2013; 25 percent by December 31, 2016; and 33 percent by 2020. These RPS requirements are set forth in SB 1078 (2001-2002 Reg. Sess.) (establishing the

California RPS Program) and SB 107 (2005-2006 Reg. Sess.), and SB X1-2 (accelerating the requirement to 33 percent requirement to 2020).

San Bernardino County General Plan

The County's General Plan governs land use planning and development decisions in the unincorporated areas of the County. The plan contains the goals, policies, and implementing actions for a variety of issues, including natural and man-made hazards and natural and man-made resources.

The Energy subsection of the Conservation Element states that the "County will site energy facilities equitably in order to minimize net energy use and consumption of natural resources, and avoid inappropriately burdening certain communities. Energy planning should conserve energy and reduce peak load demands, reduce natural resource consumption, minimize environmental impacts, and treat local communities fairly in providing energy efficiency programs and locating energy facilities."

Mojave Desert Air Quality Management District

The proposed facility is located within the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD), which reviews the plans and specifications for construction in the proposed facility location. The MDAQMD will assess emissions and possible air contamination resulting from construction and operational activities (e.g., road dust, wind-blown contaminants, and emissions from construction activities).

1.4.3 List of Potential Government Actions, Permits, and Approvals

Table 1-2 provides a list of the potential Federal, state, and local permits, approvals, and other actions that may be required for the proposed facility, including those actions that would be taken by BLM and the County.

Table 1-2. Government Actions, Permits, and Approvals

Agency	Action, Permit, or Approval
Federal Agencies	
BLM Needles Field Office	ROW Grant
USFWS	Biological Opinion and Incidental Take *Statement of federally listed species*
USACE	Clean Water Act Permit (CWA) §404 permit (possibly required, pending outcome of jurisdictional determination process)
California State Agencies	
CDFW	Incidental Take Permit *for state listed species, consistency determination for federally listed species*
	Streambed Alteration Agreement
Lahontan RWQCB	Section 401 Water Quality Certification Permit (possibly required, pending outcome of jurisdictional determination process)
	National Pollutant Discharge Elimination System (NPDES) Permit or Report of Waste Discharge (RWD)
California State Water Resources Control Board (SWRCB)	General Construction Activity Storm Water permit for construction activities on a project of 5 acres or larger
	Temporary permit to appropriate water
	Stormwater Pollution Prevention Plan
California SHPO	NHPA Section 106 Consultation
MDAQMD	Dust Control Plan
Local Agencies	
County of San Bernardino	Well Permits (up to 2 production well permits and 3 monitoring well permits)

1.5 Interagency Coordination

The BLM and the County seek comments from and work closely with other regulatory agencies that administer laws, regulations, and standards that may be applicable to proposed projects. These agencies may include, as applicable, the EPA, USFWS, USACE, State Water Resources Control Board/RWQCB, SHPO, CDFW, and the MDAQMD.

The BLM notified affected Indian Tribes regarding the proposed facility, is seeking their comments, and has invited them to consult on the project on a government-to-government basis. A summary of the tribal consultation process to date is provided in Chapter 5.

1.6 Document Organization

This document follows regulations promulgated by the CEQ for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508); the Department of the Interior's regulations, 43 CFR Part 46); the BLM NEPA Handbook H-1790-1; Sections 201, 202, and 206 of FLPMA (43 CFR 1600); and the BLM Land Use Planning Handbook, H-1601-1. This EIS/EIR describes the components of and reasonable alternatives to the Proposed Action and environmental consequences of the Proposed Action and the alternatives. In addition, the document incorporates provisions of CEQA to allow the County to use this EIS/EIR in its environmental review and approval process.

This EIS/EIR is organized as follows:

- Chapter 1 provides general background on the Proposed Action; identifies the purpose and need for the Proposed Action; and identifies roles of the BLM, other agencies, and authorities regulating aspects of the Proposed Action.
- Chapter 2 describes the Proposed Action, land use plan amendment decisions, and other decisions to be made. This chapter also describes the alternatives development and screening process conducted for the project. It also presents a range of reasonable alternatives that address the stated purpose and need for the Proposed Action and identifies and explains why certain alternatives were considered but not analyzed in detail.
- Chapter 3 describes the affected environment (existing conditions) for 21 environmental resources in the Proposed Action area.
- Chapter 4 provides a comprehensive analysis and assessment of impacts (direct, indirect, and cumulative) and mitigation measures (by resource) for the Proposed Action and other alternatives, including the No Action Alternative, and three other alternatives that would not approve the proposed facility. It also describes other aspects of BLM compliance with NEPA procedures, including a description of unavoidable adverse impacts, the commitments of resources (40 CFR, 1502.15), as well as addressing CEQA requirements, such as a discussion of potential growth-inducing impacts.
- Chapter 5 identifies the persons, groups, agencies, and other governmental bodies that were consulted or that contributed to the preparation of the EIS/EIR; describes Native American consultations and public participation during scoping; provides a list of EIS/EIR preparers; and lists agencies, organizations, and persons to whom the EIS/EIR will be sent.
- Chapter 6 includes a list of acronyms and abbreviations used in the EIS/EIR.
- Chapter 7 includes a list of project terms used in the EIS/EIR.
- Chapter 8 provides the references used in preparing the EIS/EIR.
- Chapter 9 provides an index for key words used in the EIS/EIR.

1.7 Issues to be Addressed

Section 6.4 of BLM's NEPA Handbook defines an "issue" as "a point of disagreement, debate, or dispute with the proposed action based on some anticipated environmental effect." (BLM 2008). Issues can help shape the alternatives and mitigation, and are used to frame the environmental analysis. They are identified both internally, by agency specialists, and through scoping.

The issues evaluated in the EIS/EIR include the physical, biological, cultural, socioeconomic, and other resources that have the potential to be affected by activities related to the Proposed Action and alternatives. These issues are:

- Air Resources;
- Climate Change;
- Archaeological and Built Environment;
- Environmental Justice;
- Lands and Realty (including conformance with Multiple Use Class guidelines);

- Livestock Grazing;
- Mineral Resources;
- Noise;
- Paleontological Resources;
- Public Health and Safety;
- Recreation;
- Social and Economic Issues;
- Soil Resources;
- Special Designations;
- Transportation and Public Access;
- Vegetation Resources;
- Visual Resources;
- Water Resources;
- Wildland Fire and Ecology;
- Wild Horses and Burros; and
- Wildlife Resources.

2.0 Proposed Action and Alternatives

2.1 Introduction

This chapter of the *Proposed Plan Amendment (PA) and Final* Environmental Impact Statement/Environmental Impact Report (EIS/EIR) fully describes four action alternatives: (1) the Stateline Solar Farm as proposed by Desert Stateline, LLC (the Applicant), a 300-megawatt (MW), 2,143-acre (ac) solar photovoltaic (PV) energy project with solar panel arrays and associated facilities (Proposed Action or Project); (2) a 300-MW, 2,385-acre alternative; (3) a 300-MW, *1,685*-acre alternative; and (4) a 232-MW, 1,766-acre alternative. Each of the action alternatives would have an associated amendment to the California Desert Conservation Area (CDCA) Plan 1980, as amended (BLM 1980) *(CDCA Plan)* related to the Project site*. In connection with its consideration of the Proposed Action, the BLM is also considering additional* CDCA Plan amendments to modify the boundaries of the existing Ivanpah Desert Wildlife Management Area (DWMA). This chapter also describes three No Action/No Project alternatives: (1) the No Action Alternative; and (2) two No Project Alternatives that would include an amendment to the CDCA Plan. Finally, the section provides a general description of the alternatives development process, including the alternatives considered but eliminated from detailed analysis.

Alternatives considered in this EIS/EIR are developed based on issues identified by the BLM and the County of San Bernardino, California (County), as well as comments received during the public scoping processes. *In addition, the agencies refined the alternatives evaluated in the Draft EIS/EIR based on public comments on that document, and those refinements are incorporated into this Final EIS/EIR.* The National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) (Section 15126.6) require consideration, in detail, of a reasonable range of alternatives.

Section 6.6.3 of the Bureau of Land Management (BLM) NEPA Handbook (BLM 2008) allows the evaluator to eliminate alternatives from detailed analysis if they would be ineffective (would not respond to the purpose and need), would be technologically and economically infeasible, are inconsistent with basic policy objectives for the management of the area, or if their implementation is remote or speculative. In addition to these NEPA requirements, CEQA requires consideration of alternatives that would avoid or reduce significant adverse impacts.

This document provides information to the BLM authorized officer to make the following decisions:

- Should the proposed Right-of-Way (ROW) grant be issued as applied for, issued for a modified project, or denied? If the BLM decides to approve the issuance of a ROW grant, the BLM will also amend the CDCA Plan as required.
- Should the boundaries of the Ivanpah DWMA be modified? Similarly, if the BLM decides to modify the boundaries of the DWMA, the BLM will also amend the CDCA Plan as required.
- Should the CDCA Plan be amended to identify the project site or portions of the project site suitable or unsuitable for solar development?

The document also provides information for the County to facilitate their decision whether or not to approve permits for up to two groundwater production wells and three groundwater monitoring wells associated with the construction, operation, maintenance, and decommissioning of the Project.

The Applicant provided technical information about the Proposed Action in their Plan of Development (POD) and County application package for well permits (up to two production well

permits and three monitoring well permits). All numbers referring to areas of land disturbance, equipment, schedule, mileage, and workforce are based on the most up-to-date engineering information available from the Applicant, and generally represent conservative estimates for purposes of identifying and analyzing impacts. The numbers may change based on final engineering and permit requirements for the project components. The Applicant's information was provided primarily in the POD for the facility submitted to the BLM in August 2011 (First Solar 2011)*; in the form of additional technical reports, management plans, and responses to requests for additional information submitted prior to publication of the Draft EIS/EIR; and in a POD describing the Revised Alternative 3 proposal in May 2013 (First Solar 2013a).*

2.1.1 Alternatives Development and Screening

This section outlines the process used by the BLM and County to develop the alternatives. Alternatives considered by the Applicant, BLM, and County, along with those suggested by the public during the scoping process, were evaluated using the following NEPA and CEQA criteria and requirements:

- Does the alternative fulfill all or most of the purpose, need, and objectives identified in Chapter 1 of this EIS/EIR?
- Does the alternative avoid or reduce significant effects to human and environmental resources associated with the Proposed Action or, conversely, would the alternative create significant effects potentially greater than those of the Proposed Action?
- Is the alternative feasible to construct, operate, maintain, and decommission?
- Are there any conflicts between the alternative and the objectives of federal, regional, State, and local land use plans, policies, or regulations for the area concerned?

Other alternative sites and various renewable and nonrenewable generation technologies were considered but eliminated from detailed analysis because one or more of the following criteria apply to the alternative in question (BLM NEPA Handbook H-1790-1 [BLM 2008]):

1) It is ineffective (it would not respond to the BLM project purpose and need);
2) It is technically or economically infeasible;
3) It is inconsistent with the basic policy objectives for the management of the area (does not conform to the CDCA Plan);
4) Its implementation is speculative or remote;
5) It is substantially similar in design to an alternative that is analyzed; and/or
6) It would have substantially similar effects to an alternative that is analyzed.

Similarly, under CEQA, the County does not need to consider alternatives that (i) fail to meet most of the basic project objectives; (ii) are infeasible, or (iii) cannot avoid or substantially lessen significant environmental impacts.

Alternatives that were not eliminated based on the criteria listed above were carried forward for analysis and are detailed in Sections 2.3, 2.4, and 2.5. Those that did not meet the criteria were eliminated from further analysis and are described in Section 2.8, along with the reasons for elimination.

2.1.2 Overview of the Alternatives Considered in Detail

Features common to all action alternatives, including phasing of development, proposed CDCA Plan amendments, project components, construction methods, and modification of the Ivanpah DWMA, are detailed in this section. Project features and construction methods listed in this section will serve as the basis of the environmental impact analysis in Chapter 4.

The four full action alternatives, one No Action Alternative, and two No Project Alternatives, which are described in detail in Sections 2.3 through 2.5, are as follows:

- Alternative 1: The Proposed Action – 300 MW generated on 2,143 acres;
- Alternative 2: 2,385 Acre Alternative – 300 MW generated on 2,385 acres;
- *Revised* Alternative 3: *1,685* Acre Alternative – 300 MW generated on *1,685* acres;
- Alternative 4: Reduced Acreage Alternative – 232 MW generated on 1,766 acres;
- Alternative 5: No Action Alternative – No issuance of a ROW Grant, No County Approval, No Land Use Plan (LUP) Amendment;
- Alternative 6: No Project, Exclude Solar on Site Alternative – No issuance of a ROW Grant, No County Approval, Approval of a LUP Amendment to identify the site of the Proposed Action as unsuitable for solar energy development; and
- Alternative 7: No Project, Approve Solar on Site Alternative – No issuance of a ROW Grant, No County Approval, Approval of a LUP Amendment to identify the site of the Proposed Action as suitable for future solar energy development.

This Final EIS/EIR is also being used as the mechanism to evaluate modifications to the CDCA Plan that would potentially modify the boundaries of the existing Ivanpah DWMA.

With Alternative 5, none of the project components would be built, none of the CDCA Plan amendments would be made. This alternative is equivalent to the No Project Alternative under CEQA (Section 15126.6(e)) and the No Action Alternative under NEPA. With Alternatives 6 and 7, none of the project components would be built (no project), but an amendment to the CDCA Plan would identify the project site as either unsuitable or suitable for future solar energy development.

2.1.3 Features Common to all Action Alternatives

The general location of the Project Study Area and Proposed Action are provided in Figure 1-1. ll four action alternatives would be located within the boundaries of the Project Study Area. The action alternatives have a common description of equipment, systems, processes, resource inputs, operations, closure plans, and general location. To avoid redundancy, this section presents a single project description that identifies the *features* common to all alternatives, and then separately identifies the *features* that are unique to each alternative.

2.1.3.1 Structures and Facilities

The Stateline Solar Farm Project would include PV modules for energy production, an electrical collection system for collecting and distributing the power, a generation-tie (gen-tie) line, an electrical substation, access roads, an operations and maintenance (O&M) facility, one or more meteorological stations, and fencing and other site security components.

Solar Panel Arrays

The PV modules used at the Stateline Solar Farm Project would be constructed using First Solar's thin film cadmium telluride (CdTe) PV panels. PV modules would be mounted at a fixed angle to "tables" which are then mounted on steel columns approximately *14* feet apart. Columns would be secured without concrete footings by being driven into the ground. The PV modules would be placed in linear arrays with positioning of the arrays based on various site constraints including location of other site facilities, topography and biological concerns. The modules would be spaced approximately 6 feet apart from each other. The arrays, when completed, would be approximately six feet high, and would be a minimum of 18 inches above the ground surface. *The configuration of the modules and other project components on the site would vary among the alternatives, resulting in differing total acreage and output.*

One or more meteorological monitoring stations would also be installed within the solar array areas prior to construction. These stations would be linked to the facility Data Acquisition System to collect weather data for analysis and system monitoring. During operations, 10 meteorological stations would operate throughout the facility area.

Temporary Construction Areas

Temporary construction facilities for the Stateline Solar Farm Project would include five temporary staging areas, construction offices with temporary power and communications connections, and parking areas. Temporary fencing would surround the staging and office areas to provide security while the site's perimeter fence is under construction. The five staging areas would comprise a total of about *41* acres. The construction offices and parking areas are expected to comprise approximately 15 acres. Some of these areas would eventually be filled in with solar arrays as construction nears its end, and would then be included within the fenceline of the ROW.

Operations and Maintenance Facility

The Stateline Solar Farm Project's O&M facility would be constructed next to the on-site Project Substation. The facility would consist of an approximately 45-foot wide by 110-foot long prefabricated building set on concrete slab-on-grade. The facility would be designated for storage of maintenance equipment and replacement parts and would contain the plant power and security monitoring systems. The O&M facility would also include offices and a restroom.

Electrical Collection and Transmission System

PV modules that are electrically connected would distribute current to a "combiner box." Combiner boxes feed into an array's Power Conversion System (PCS) via underground direct current (DC) cables. The DC input would be converted to alternating current (AC) output using inverter hardware located in a PCS. PV combining switchgear (PVCS), located in cabinets dispersed among the PV arrays would collect 34.5 kilovolt (kV) AC output from a group of arrays and transmit the power to the on-site Project Substation through 60-foot high overhead transmission lines.

The Project Substation facility would be located in a 2.5-acre area centrally located within Project area north of the existing transmission lines. Transformers at the Project Substation would step up the 34.5 kV voltage of a solar panel array to 220 kV for off-site transmission to the Ivanpah Substation. An additional building approximately 15 feet by 50 feet in size, serving as the site control center, would be constructed adjacent to the on-site substation.

At 220 kV, the electricity would be exported to the California Independent System Operator - operated grid via the Southern California Edison (SCE)-owned transmission system. The SCE transmission system would be accessed by way of a 220-kV gen-tie line that would exit the southwestern portion of the Project site. The new 220-kV gen-tie line would follow a 160-foot-wide transmission ROW to SCE's Ivanpah Substation which will be located approximately *2.7* miles south of the Project site. This proposed transmission line would be located within two overlapping designated utility corridors, CDCA Utility Corridor BB and West-Wide Energy Corridor 225-27. An application for interconnection at the new Ivanpah Substation was filed with the California Independent System Operator on January 9, 2007.

Redundant communications links would be installed from the project substation to the Ivanpah Substation. A fiber optic communication line would be strung overhead on the same towers as the 220-kV gen-tie line, and an additional fiber optic communication line would be buried within the 160-foot wide transmission ROW.

In addition to electrical lines for offsite transmission, the proposed facility would include a new service line to provide electricity to the site during construction, and at night during operations. This line would be strung overhead, and would run parallel to the facility access road along the western edge of the golf course.

Road System

Access to the Stateline Solar Farm Project would occur via the Yates Well Road exit from Interstate 15 (I-15). Yates Well Road is a two-lane road that provides access from I-15 to the Ivanpah Solar Electric Generation Station (SEGS), the Primm Valley Golf Club, and off-road recreation areas in the vicinity of the Project site. Yates Well Road terminates at Silverton Road. Silverton Road is an unstriped local road west of and adjacent to the Primm Valley Golf Club property. The primary access to the project site would be from the terminus of Silverton Road at Saragosa Drive at the northwest corner of the Primm Valley Golf Club property. Silverton Road is paved from Yates Well Road to Dalmatia Road, but is an unpaved dirt road north of Dalmatia Road, and provides access to the west side of the golf course. The Stateline Solar Farm Project Study Area also includes Densmore Drive and Colosseum Road. These are paved roads that provide access to the Ivanpah SEGS from Yates Well Road.

Construction of the Proposed Action would require construction of a 1.65 mile-long access road from the west side of the golf course to the site. This access road would be *located* within a 100 foot-wide ROW. *The road would be 30 feet wide along most of its route, but would then widen to 40 feet and then 60 feet near the site entrance, to provide additional travel lanes to manage visitors, workers, and deliveries during construction.* The access road would be paralled by an electrical service line. The access road would be protected by tortoise fencing on both sides for its entire length.

The Stateline Solar Farm Project would require additional graded all-weather roads within the fenced area to support construction and maintenance of the site by providing access to bring equipment and materials from the staging areas to the construction work areas*, and to support access during operations*. Roads within the facility would vary in width and type of construction. The final width and surfacing materials would be determined during final engineering design, in accordance with recommendations of the Final Geotechnical Report. Roads would be constructed from compacted native soil, compacted soil with palliatives, compacted native soil with gravel cover, and/or asphalt, depending on location and planned use. Additionally, soil would be compacted to a maximum of 95 percent to allow heavy construction equipment to move across the site. The total length of roads (internal and site access) associated with the

project would be *54.5* miles*, including 23 acres of site access and groundwater well access roads outside of the solar array fenceline.*

The proposed facility area includes three routes of travel designated by BLM as open routes. These routes include route 699226 (1.8 miles encompassed by the Proposed Action), 699198 (2.0 miles), and 699238 (1.4 miles)*, and together comprise approximately 6.3 acres of road surface*. Off-road, recreational vehicle trails currently authorized by BLM which run through the proposed site would be re-located outside of the project boundary fence, and the re-located routes would be designated by BLM as open routes. *The re-located routes would be constructed by the Applicant, and would be constructed prior to fencing off of the existing routes. The locations of the re-located routes under each alternative are presented and discussed in Section 4.6.* The redirected routes would be designed and constructed to minimize damage to soil, watershed, vegetation, and air resources consistent with BLM's applicable regulations and consistent with existing open routes. The re-aligned routes may be widened and compacted per fire code requirements if designated for emergency access. The re-aligned routes would not be part of the ROW grant for the project.

Fencing and Security

During construction, the perimeter of the project area would be fenced with *a 7-foot* tall chain-link fence for security purposes. In addition, *6*-foot chain-link fencing *topped with barbed wire* would surround the Project's on-site substation, switching station, O&M facility, and the temporary construction staging areas. Gates would be installed at the roads entering the Project area. *The construction fencing would remain in place during operations.* During operations, security fencing sensors or other functional equivalent would be installed to alert security personnel of possible security issues.

A guard shack would be constructed at the entrance to the Proposed Solar Farm Project for use by security personnel during Project construction and operations phases. Surveillance methods such as security cameras, motion detectors, or heat sensors would be installed at locations along the Project boundary.

In order to minimize the Project's visual impact on surrounding receptors and roads, there would be no lights around the facility perimeter. Exterior lights at the O&M facility, Project Substation, temporary construction areas, and at the PCS stations would be shielded and focused downward and toward the interior of the site to minimize lighting impacts to the night sky and to neighboring areas.

Utilities

A maximum amount of 1,900 acre-feet of water would be used during the approximately 2 to 4 year construction period, with the majority of the construction water use *(55 percent)* occurring during the site preparation period of the first year. Water uses include soil compaction, dust control, and sanitary needs. The peak daily water *withdrawal* is estimated to be 1.5 million gallons per day (mgd) during construction. *Peak* daily demand during construction *may exceed 1.5 mgd, but* would be managed by controlling the capacity of the water storage ponds. The Applicant reports in their POD that water is not needed during operations for washing of the solar panels.

Water for the construction and operation of the Project would be drawn from the South Ivanpah Groundwater Basin. Water would be provided from two new groundwater production wells installed and operated by the Applicant. Well construction requires approval from San Bernardino County. Water uses during construction would include soil compaction, dust control,

and sanitary needs. The peak daily water *withdrawal* is estimated to be approximately 1.5 million gpd. The water would be obtained from two new groundwater production wells; the primary well to be located on the southeastern corner of the facility, and the secondary well located approximately 4,250 feet west of facility. The production wells would be 12 inches in diameter and 670 feet deep, with a screened interval located at a depth of 430 to 630 feet below ground surface. The estimated pumping capacity for each well would be 1.5 million gpd, but only one well would produce at a time to generate the peak daily water *withdrawal* of 1.5 million gpd (i.e., there would not be a situation in which both wells are produced to exceed 1.5 million gpd).

Should the water quality or availability from the primary production well be inadequate for the proposed uses, the Applicant would obtain water from the secondary well. Should the water quality or availability from the secondary well be inadequate, the Applicant would treat the groundwater using a mobile, self-contained ion exchange or reverse osmosis unit. The mobile units would be brought to the site by flat-bed truck, would be situated within the Temporary Construction Area, and would be approximately the size of a 40 foot by 8 foot by 8 foot shipping container. The treated water may be used directly, or could be blended with water stored in temporary storage ponds to meet the desired water quality. The units would be operated and maintained by an outside contractor. The units would require replacement of filters approximately once per week, and the reverse osmosis membrane once per quarter. All wastes from the treatment units would be disposed of offsite by the contractor. Disposal would be done in accordance with local, state, and Federal regulations.

In addition to the production wells, three groundwater monitoring wells would be installed to evaluate potential impacts to groundwater availability and quality. The monitoring wells would be *constructed at a depth appropriate for evaluating changes in groundwater elevation. Exact depths would be determined at each location based on ground surface elevation and depth to the groundwater table.*

To meet the daily water demands during construction, five temporary water storage ponds would be constructed within the solar array area. Each pond would have a capacity of approximately 2 million gallons, and would be approximately 200 feet by 200 feet in size, or approximately 1 acre. The ponds would be excavated into the soil and then lined. These five ponds would be connected to the water supply wells by a series of 6-inch diameter water pipelines. *The water pipelines within the solar array areas would be lie on the ground surface. The water pipeline from the secondary well to the solar array would be buried.* Water trucks would receive water from the storage ponds and transport it to the location it is needed. As specified in the Applicant's Closure, Decommissioning, and Reclamation Plan (First Solar 2012d), the temporary ponds would have their liners removed, and would either be backfilled or converted to stormwater basins at the completion of construction.

After completion of the construction phase of the Stateline Solar Farm Project, the only groundwater use would be for domestic purposes (drinking, washing, toilets) in the O&M Facility. According to the Applicant, no water would be required for washing of solar panels. Water would be supplied by an approximately 5,000-gallon, above-ground water storage tank connected to the groundwater well. Water would be filtered to meet U.S. Environmental Protection Agency (EPA) and California drinking water standards, and samples would be collected and submitted to EPA for analysis to verify that it meets the standards. The expected annual demand for water for sanitary purposes is approximately 20 acre-feet per year.

A temporary septic system and leach field would be installed near the temporary construction trailers, in order to support workers in the trailer area. Portable toilets would be used throughout the solar array fields to support construction workers in those areas. A *long-term* septic and leach field system with a capacity of no more than a few hundred gallons per day would be

installed at the O&M building to support workers during operations. The septic systems would be permitted through the County and would include features to avoid any impacts to the South Ivanpah Groundwater Basin. These features may include locating the system away from surface water drainage features, scour protection over the absorption field, monitoring wells to inspect against clogging in the absorption field, large absorption area to maximize the area of biological treatment, and/or regular maintenance by a licensed waste management contractor. Weed infestations would be monitored and mitigated at the absorption field according to the Applicant's *Integrated* Weed Management Plan (First Solar *2013c*). The septic tank would be pumped, waste transported off site, and properly disposed of by a licensed waste treatment contractor on a regular basis as required for safe operation.

Waste and Hazardous Materials Management

As described previously, a septic system and leach field would be used for sanitary wastewater treatment needs during project construction and operations. In addition, portable toilets would be used in the solar array field area during construction. Portable toilets would be regularly pumped out and cleaned according to California Occupational Health and Safety Administration regulations. Waste would be hauled away and disposed of by an appropriately licensed contractor.

Non-hazardous solid wastes generated during construction would include scrap wood, cardboard, concrete, steel/metal, paper, glass, scrap metals, and plastic waste. All non-hazardous wastes would be recycled to the extent possible and non-recyclable wastes would be collected by a licensed hauler and disposed in a Class III solid waste disposal facility.

Limited quantities of hazardous materials would be stored onsite and used during construction and operations. These materials are discussed in the Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), and include diesel fuel, gasoline, motor oil, hydraulic fluids, lubricants, paint, solvents, soil stabilizers, and mineral oil for step-up and substation transformers. According to the Applicant's Air Quality Construction Management Plan (First Solar 2012c), the soil stabilizer products that could be used include ChlorTex Road Binder, Eccotext Soil Binder, and PlasTex Soil Stabilizer.

The hazardous materials to be used, and their storage volumes during construction and operations, are provided in Table 2-1.

Table 2-1. Hazardous Material Usage and Storage

Hazardous Material	Storage Volume During Construction	Storage Volume During Operations
Diesel Fuel	5,000 gallons	0 gallons
Gasoline	5,000 gallons	5,000 gallons
30W Motor Oil	100 quarts	0 quarts
Transformer Oil (Mineral Oil)	From 0 gallons at beginning of construction up to 72,000 gallons at end of construction	72,000 gallons
Hydraulic Fluid and Lube Oil	500 gallons	100 gallons
Soil Stabilizer (ChlorTex Road Binder, Eccotex Soil Binder, or PlasTex Soil Stabilizer)	500 gallons	500 gallons

These substances would be containerized and disposed of according to local, State, and Federal regulations. As a facility storing more than 1,320 gallons of oil onsite during operations, the facility will be required to develop and implement a Spill Prevention, Control, and Countermeasures (SPCC) Plan. The SPCC Plan would be required to identify the locations and volume of storage of oil on the facility, identify measures used to prevent discharges, and implement secondary containment and other methods to control discharges. The SPCC Plan would also specify routine maintenance, inspection, posting of material safety data sheets (MSDS), and emergency response procedures.

First Solar PV modules are not hazardous materials subject to California or Federal hazardous material management regulations. Any modules damaged or broken during construction or operation would be collected and returned to First Solar's manufacturing facility in Ohio for recycling into new modules or other products, according to First Solar's Broken PV Module Detection and Handling Plan. At the end of their productive life, the modules would be classified as California hazardous waste, but not federal hazardous waste. The modules would be packaged and transported in accordance with California hazardous waste regulations, and then recycled under First Solar's Module Collection and Recycling Program.

Stormwater Management

The proposed facility is located on an active alluvial fan system, and is crossed by numerous ephemeral drainages that begin in the Clark Mountains west of the site, and traverse to the east towards Ivanpah Dry Lake. To ensure that the facility is protected from stormwater damage, and also to ensure that the facility does not create sedimentation and erosion impacts in downstream areas, the Applicant would implement stormwater management features including stormwater basins on both the upstream and downstream sides of the facility, and the use of temporary fiber rolls and silt fences as needed to manage stormwater during construction.

In the POD and the associated hydrology reports, the Applicant refers to the upstream basins as "debris basins" and the downstream basins as "sediment basins". In fact, these terms are interchangeable, and each refers to an engineered depression in the ground surface in which stormwater is captured and slowed, allowing any solid materials (debris, sediment, plant material, and any other material) to settle out and remain within the basin, and then releasing stormwater at a lower velocity. Although the technical terms are interchangeable, this EIS/EIR will continue to refer to the upstream structures as "debris basins" and the downstream structures as "sediment basins", in order to be consistent with the terminology in the POD.

To support the design of these features, the Applicant contacted BLM as early as 2009 to determine the level of stormwater modeling and analysis that would be required. In addition, the Applicant has developed a Storm Water Management Plan (First Solar 2012k) which describes how the stormwater management structures would be installed and maintained.

The design features of the site that would be implemented to assist in managing stormwater are as follows:

- Avoidance of Drainage Channels. The two major identified drainage channels that pass through the Project Study Area would be avoided entirely. The presence of the topographic feature known as "Metamorphic Hill" located to the west of the facility diverts stormwater to the south and north, partially protecting the facility which is situated to the north and east. Metamorphic Hill results in channeling stormwater into a major drainage channel (designated the North Wash) that passes south between Metamorphic Hill and the Primm Valley Golf Course on its way towards Ivanpah Dry Lake. The configuration of the Proposed Action, as well as potential alternative site configurations, has been developed to avoid these two major drainages.

- Debris Basins. The entire upstream perimeter of the proposed facility would consist of the following series of structures: desert tortoise fence, 10 foot wide minimum buffer, chain-link security fence, 15 foot wide minimum buffer, debris basin (approximately 6 feet deep, and varying in width from 107 to 137 feet), 10 foot wide minimum buffer, 20 foot wide access road, 20 foot wide buffer, and then PV arrays. The *preliminary design indicates that the* basins would be constructed with a 3:1 rip-rap lined slope on the upgradient end, and a 4:1 slope on the downgradient end. *Specific sizes of the basins may vary based on the final design.* The number of basins would be determined following topographic surveys based on existing topography. Because the downstream lip of each basin must be at the same level, the size of each basin would be driven by the slope in the local area. Areas with higher slopes would, by definition, require a larger number of small basins while areas with flatter slopes would have a smaller number of long basins. The bottom and downgradient surfaces of the basin would consist of compacted soil. The basin would be designed to release runoff in the form of sheet flow from the lower edge of the basin. The basins would be cleared of sediment using backhoes or small excavators, which can access the basins from the buffer areas on either side. Sediment would be removed after all significant stormwater events, and would be visually inspected on a bi-annual basis. Sediment would be removed when it exceeds 4 inches in depth. The removed sediment would be distributed on the 10 foot wide buffer area immediately downgradient of the basin, and would re-enter the sedimentation system. The size of the basins was developed using flow modeling, and the size of the basins was designed to contain the volume for storms up to the 85 percentile (1.2 year) storm. For larger storms, the basins would slow stormwater, and would release the excess water volume at a slower velocity over the downstream edge. The flow modeling included analysis of the existence of the Ivanpah SEGS facility upstream of the Stateline facility. The Ivanpah SEGS facility is being constructed using a low-impact development methodology that does not involve any debris or sediment basins, and therefore has a minimal impact on stormwater flow.
- Sediment Basins. The downstream perimeter of the proposed facility would include sediment basins. The basins would be approximately 1.5 feet deep, with a width of approximately 24 feet. The basins would have 4:1 slopes on both upstream and downstream sides, and would be constructed of compacted soil. The purpose of the sediment basins would be to capture any additional sediment generated by the site as a result of vegetation removal. The design basis hydrology calculations used to establish the necessary size of the debris basins was also used for the sediment basins. Because the topography on the upstream and downstream sides of the facility differ, the total number of basins, and their individual sizes, would also differ.
- Silt Fence and Fiber Rolls. Silt fencing and fiber rolls would be used to slow stormwater flow and capture sediment during construction, especially in the period before the debris and sediment basins are completed.
- Internal Road System and Wash Crossings. Roads within the facility would vary in width and type of construction. The final width and surfacing materials would be determined during final engineering design, in accordance with recommendations of the Final Geotechnical Report. Roads would be constructed from compacted native soil, compacted soil with palliatives, compacted native soil with gravel cover, and/or asphalt, depending on location and planned use. At locations where roads cross washes, cement ford crossings would be installed. The width and thickness of each crossing would be determined on a site-specific basis, depending on the size of the wash*, to ensure adequate flow-through during storm events*.

All of these features would be integrated into the Construction Stormwater Pollution Prevention Plan (SWPPP), to be developed by the Applicant as required by the Clean Water Act. There are no protective berms, ditches, or check dams proposed in the grading plans.

2.1.3.2 Construction

2.1.3.2.1 Construction Sequence and Equipment

Stateline Solar Farm Project construction phases would include: (i) pre-construction geotechnical study; (2) construction mobilization and (iii) construction and assembly of the solar arrays and electrical tie-ins. Construction mobilization includes preconstruction surveys; construction of access roads; and installation of construction trailers, laydown areas, materials storage areas, and wells. After construction mobilization, construction of the PV arrays and gen-tie line would begin at a rate of approximately 1 MW per day after an initial ramp up period.

Schedule and Workforce

The construction of the Project is expected to take 2 to 4 years from pre-construction surveys to completion. Construction would begin with installation of civil improvements, including site laydown areas, construction of access/maintenance roads, and installation of temporary facilities. The construction work schedule is expected to be from 7:00 A.M. to 5:00 P.M., Monday through Friday. However, to meet schedule demands, it may be necessary to work early morning, evening, or nights and on weekends during certain construction phases. Varying work hours can also improve the work environment by working during more favorable temperatures. For safety reasons, certain construction tasks, including final electrical terminations, may be performed after dark when no electricity is being produced by the PV modules.

The average on-site construction workforce is expected to be approximately 400 employees, with a peak of approximately 600 employees. The construction workforce would be recruited from within the County, and Clark County, Nevada. During operation of the facility, the fulltime workforce is estimated to be seven to ten workers. This staff would be primarily for O&M and 24-hour onsite security. Typical O&M work schedules are expected to be during daylight hours. However, for safety reasons, some maintenance work is required after dark when PV modules are not generating electricity.

Materials and Equipment

Construction equipment would consist of standard earth moving and compaction equipment such as graders, bulldozers, tractors, rollers, trenchers, backhoes, and dump trucks. Construction would also involve the use of forklifts, water trucks, pickup trucks, and ATVs, truck-mounted/tracked pile drivers, and well drilling equipment.

Equipment used for the onsite infrastructure would include fencing, PV modules, and wiring to provide the electrical interconnections. Some concrete would be used to create foundations and pads for construction offices, the O&M facility, and substations.

2.1.3.2.2 Site Preparation

Geotechnical Investigation

The first step in the construction process would be the completion of geotechnical studies to gather the information necessary to determine soil stability and the required depths of footings for site structures. The investigations would occur throughout the proposed solar farm site, the gen-tie route, the on-site substation, and the access route. Testing would consist of test pile-driving, test pits, and soil borings at 23 test locations. Each test location would comprise an area of no more than 15 feet by 20 feet, or 300 square feet. The total acreage affected by the testing would comprise less than 0.2 acres. The testing would also include soil DC resistivity surveys at 8 locations. These tests would be conducted to estimate the electrical properties of the surface and subsurface materials by identifying their approximate resistivity.

The soil borings would be installed using a truck-mounted drill rig with an 8-inch hollow-stem auger. The borings would range from 10 to 30 feet in depth. The test pits would be installed using a four-wheel drive rubber tire or track-mounted backhoe, based on equipment availability. The test pits would be approximately 24 inches wide, 8 feet long, and 10 feet deep. The spoils pile would be placed adjacent to the trench and, once a sample was collected, the trench would immediately be backfilled with the original soil. The soil would be tamped with the backhoe to return the soil surface to its original grade.

Pile driving, pile testing, and pile removal would be conducted using a one-pile driving rig, a loader (either backhoe or bobcat), and a pick-up truck. The operation would include three employees working as operators, and up to two additional staff associated with the testing. The piles would be 6-inches by 6-inches in size, and would be driven to depths of approximately 4 to 6 feet below ground surface. Once installed, the piles would be subjected to pile uplift and lateral deflection testing. Following testing, the piles would be removed from the ground using the loader or backhoe. The displaced soils would be smoothed over the surface to restore original grade.

All testing activities would be conducted under the field oversight of a biological resources monitor, cultural resources monitor, and paleontology monitor. The monitors would have the authority to adjust the testing locations (on a micro-level), and to stop work, if necessary, to avoid sensitive resources. The Applicant would coordinate their testing with SCE and Los Angeles Department of Water and Power (LADWP) to ensure that the testing would not interfere with existing infrastructure.

Surveying and Staking

Prior to construction, the limits of construction disturbance areas would be determined by surveying and staking. Where necessary, the limits of the ROWs would also be flagged. All construction activities would be confined to these areas to prevent unnecessary impacts affecting sensitive areas. These areas, which would include buffers established to protect biological resources, would also be staked and flagged. The locations of underground utilities would be located and staked and flagged in order to guide construction activities.

Stakes and flagging that are disturbed during construction would be repaired or replaced before construction continues. Stakes and flagging would be removed when construction and restoration are completed.

Fencing and Clearance Surveys

Following surveying, the site would be fenced with both security fencing and tortoise fencing. Once the area has been fenced, the area inside the fence would be subjected to tortoise clearance surveys conducted in accordance with the USFWS Desert Tortoise Field Manual and current translocation guidance. Clearance would include translocation of tortoises, in accordance with the Applicant's Desert Tortoise Translocation Plan.

Vegetation Removal

Prior to construction, the Applicant would conduct an inventory and transplant cactus and yucca species *and special-status plants* according to their Vegetation Management Plan (First Solar 2012f). *The Applicant has identified two proposed transplant sites outside of the project footprint for special status plants. One, designated the Upper Alluvial Fan Transplant Site and located to the northwest of the proposed facility, is comprised of relatively rocky terrain, and would be used for transplanting special-status plants salvaged from similar areas of the project site. The second, designated as the Lower Alluvial Fan Transplant Site, would be located near the Dry Lake Bed north of the golf course, and would be used for transplanting species such as small-flowered and rostephium, which are found in the finer-grained soils on the project site. Succulents would be transplanted within the project fenceline, in the areas east and west of the substation, near the parking area, and in other smaller areas throughout the project site.*

The process to be used for the effort would be as follows:

- *The Applicant would prepare standard herbarium voucher specimens, which would be deposited into the Rancho Santa Ana Botanic Garden Herbarium and the University of California Berkeley Jepson Herbaria for permanent archive.*
- *Pre-construction clearance surveys would be used to identify, flag, and record locations of target species, including special-status plants and succulents. For succulents which meet the criteria for salvage (over 60 percent live branches and mostly stable root system), flagging would include recording directional orientation.*
- *Special-status plants identified would be targeted for a variety of potential propagation methods, to occur while the plant is still in place. Seed collection would be conducted, and the seeds would be used to germinate seedlings. A different approach would be used for small-flowered and rostephium, which is an annual bulbiferous herb. For these plants, bulbs would be excavated and propagated. Propagation from cuttings from existing plants could also be conducted. In each case, the propagation would be conducted at an ex-situ location until potentially viable seedlings and cuttings can be transplanted to the appropriate transplant site.*
- *Once pre-construction activities are completed and site disturbance that would affect the plant is about to occur, the plant itself would be transplanted to the appropriate transplant site. Transplanting would occur by excavating transplant holes of appropriate size, and backfilling the hole with surface soil from around the excavation. Use of surface soil and supplemental mycorrhizal inoculation would be used to promote native mycorrhizal soil symbionts. The plants would be placed into the holes immediately after the holes are filled with water. The original directional orientation of the plant would be re-created, and the surface soil would be lightly compacted around the base of the plant.*
- *Transplant of succulents would occur between October and March to the extent feasible. Equipment to be used would include small bobcats or excavators for removal, standard pickup truck for transport, and hand tools for pruning, handling, and moving plants. The plants would be transferred to the appropriate transplant site, set on pallets, and covered*

for protection from the sun. The roots would be clipped and allowed to dry and callous for one to three weeks, and then the plant would be transplanted.

- *All desert tortoise protection requirements followed for site construction would also be followed for the transplant activities. Access would be only by using existing roads, and then transferring the plant and materials into the transplant site by foot. All transplant sites would be recorded by GPS.*
- *Once planted, the transplant sites would be monitored monthly for a period of two years, and then quarterly for an additional ten years. The success criterion is established at a 50 percent survival rate. Monitoring results would be reported in quarterly and annual reports submitted to BLM and CDFW. Special reports would be submitted following the two year construction period, and following the 10 year post-construction period.*

Clearing, Grading, and Excavation

Clearing and, in some limited areas, grading would be conducted to establish new roads, staging areas, concrete pads, and the solar array field. *The amount of clearing and grading would vary among the action alternatives, as discussed in the alternative-specific descriptions in Section 2.3.* There would be no excess excavated material from project construction. Soil excavation and fill requirements would be balanced.

Gravel, Aggregate, and Concrete Needs and Sources

Prior to construction, site access roads would be stabilized with gravel, aggregate or other road stabilization material, such as geotextile fabric. The stabilization materials would be obtained locally to the extent possible.

Inverter enclosures and transformers would be placed on poured or pre-cast concrete foundations/vaults. Concrete foundations are also needed for construction offices and the O&M facility. The total volumes of gravel, aggregate, and concrete to be used for the Project are estimated as follows:

- Portland Cement Concrete (pre-cast or poured in place) > 10,000 cubic yards
- Class II Aggregate Base (for onsite structures) > 9,000 cubic yards
- Class II Aggregate for gravel base roads and parking areas (8 inches thick) > 50,000 cubic yards
- Rip-rap for drainage basin protection > 15,000 cubic yards

2.1.3.2.3 Assembly and Construction

The assembly and construction phase involves installation of all site facilities and equipment including the PV solar arrays and electrical equipment that would export electricity to the grid. The assembly and construction tasks are summarized below:

1. Installation of the vertical support posts into the ground;
2. Digging of trenches for the underground AC and DC cabling;
3. Preparation of the foundations for the inverter enclosures and transformers;
4. Installation of module support tables and support brackets;
5. Mounting of PCS enclosures; and

6. Making electrical connections.

Electrical connections would be made for a single array of modules after the complete array has been installed. An electrician would connect module wiring harnesses to a combiner box which connects an array of PV modules. Combiner boxes would be connected to power inverters in the PCS enclosures through underground DC cables. Each inverter would convert the DC power to three-phase AC power. The AC power would be fed into a step-up transformer. Transformers would be connected through underground AC cables to the PVCS. Each PVCS would combine the power output from multiple arrays. Power would then be transferred to overhead lines which would route all power to the Project Substation. The Project Substation would step the power from 34.5 kV up to 220 kV for transmission through the 220-kV gen-tie line to the Ivanpah Substation.

2.1.3.2.4 Site Stabilization, Protection, and Reclamation

A geotechnical study has been developed to support project design and provide input with respect to soil conditions and needed stabilization measures. Before construction begins on the Project, the Applicant would interpret the geotechnical study and determine appropriate site stabilization measures for the Project.

During Project operations, there would be few activities that could impact the site conditions. Driving of vehicles around the Project site would be the primary disruptive activity and would result in the need for routine maintenance of access roads and aisle ways. Other project areas, such as those covered by PV panels, would not be routinely disturbed.

2.1.3.3 Operation and Maintenance

Solar power generation with PV arrays generates electricity with no moving parts, no thermal cycle, and no water use for electricity generation. As such, the Stateline Solar Farm Project would require only limited routine operation and maintenance tasks. Project maintenance activities would include road maintenance, vegetation management, scheduled maintenance of electrical equipment, and occasional equipment replacement. Additionally, a dust palliative would be applied on dirt access roads as necessary. According to the Applicant's Air Quality Construction Management Plan (First Solar 2012c), the soil stabilizer products that could be used include ChlorTex Road Binder, Eccotext Soil Binder, and PlasTex Soil Stabilizer. The Applicant's POD states that their technology does not require the use of water to wash panels.

2.1.3.4 Decommissioning

The proposed Stateline Solar Farm would have an anticipated lifetime of 30 years, and it is likely that after that time the site would be decommissioned and existing facilities and equipment would be removed. Project decommission would involve complete removal of the PV arrays and supporting electrical and facility systems. Following decommissioning, the area would be reclaimed and restored according to applicable regulations at the time of decommissioning. Decommissioning is expected to occur over a period of 2 to 3 years, beginning within 3 years after the termination of commercial operation.

The Applicant has submitted a preliminary Closure, Decommissioning, and Reclamation Plan (Decommissioning Plan; First Solar 2012d) which summarizes the activities that would occur during construction and operations to pre-position the facility for decommissioning, and the activities that are expected to take place during the decommissioning process. Because site conditions and agency requirements are expected to change over the course of the 30-year

project lifespan, a Final Decommissioning Plan would be developed prior to termination of the ROW authorization, and would be approved by the BLM.

The Decommissioning Plan addresses the following issues:

- Site preparation for decommissioning, including removal of hazardous materials;
- Removal of project-related infrastructure;
- Reuse, recycling, or disposal of components and wastes;
- Site restoration and revegetation efforts, including decompaction, seeding, and planting of seedlines;
- Site monitoring and success criteria; and
- Cost estimate and funding mechanism for these activities.

Upon cessation of operations, all structures constructed on the site would be removed. This would include PV modules and their supporting posts, several PCSs, PV Combing Switchgear cabinets, transmission system, the project substation, and ancillary facilities. Ancillary facilities to be removed would include the O&M facility, parking areas, septic and leach system, water storage tanks, access roads, fence, and lighting. The full extent of removal would depend on the planned use of the site following termination of the ROW. If the site is planned to continue use for industrial or commercial purposes, certain facilities may be left in place with the approval of BLM. If no further use as a developed site is planned, the site would be restored to its current condition as natural habitat and rural open space.

Removal and recycling of the PV modules would be done in accordance with First Solar's pre-funded module recycling program, established in 2005, through which modules may be returned to First Solar for recycling at no cost to the end user. As modules are sold, the anticipated recycling cost is pre-funded into a trust account that is managed by a third-party trustee. The program enables all components of the modules, including the glass and the encapsulated semi-conductor material, to be processed into new modules or other products.

During removal of facility structures, disturbed areas would be stabilized to protect the site against stormwater runoff and sedimentation damage during final revegetation. Both site conditions and regulations may have changed at the time of decommissioning, so specific details regarding site stabilization methods would be proposed by the Applicant for agency approval at that time. However, the methods are expected to include the use of standard erosion control Best Management Practices (BMPs) such as mulch, fiber rolls, silt fence, and re-seeding.

Site restoration activities to occur at the close of the project life would include:

- Decompaction and replacement of topsoils;
- *Replacement of topsoil, vertical mulching, and supplemental* seeding;
- Planting of a combination of annual and perennial woody species, shrubs, and succulents;
- Weed control; and
- Performance monitoring*, comparison to established reference habitats,* and reporting for a minimum of 5 years, with re-seeding as necessary.

The proposed seed mix to be used for supplemental re-seeding is summarized in Table 2-2. The proposed container plants to be transplanted are summarized in Table 2-3.

Table 2-2: Summary of Proposed Seed Mix for Supplemental Re-Seeding

Seed List		
Scientific Name	**Common Name**	**Pure Live Seed (PLS, pounds/acre)**
Ambrosia dumosa	burro-weed	4.00
Amsinckia tessellata	devil's lettuce	3.00
Atriplex canescens	four-wing saltbush	3.00
Camissonia brevipes	golden suncup	0.50
Chaenactis fremontii	desert pincushion	3.00
Encelia farinosa	brittlebush	1.00
Eriogonum fasciculatum var. *polifolium*	rosemary California buckwheat	3.00
Eriophyllum wallacei	woolly easterbonnets	1.00
Eschscholzia glyptosperma	desert golden poppy	1.00
Hymenoclea salsola	cheesebush	3.00
Larrea tridentata	creosote bush	6.00
Malacothrix glabrata	desert dandelion	1.00
Pleuraphis rigida	big galleta	5.00
Salvia columbariae	chia	1.00
Sphaeralcea ambigua	desert globe mallow	0.10
Total		35.60

Source: First Solar 2012d

Table 2-3: Summary of Plants for Transplantation

Scientific Name	**Common Name**	**Container Size**	**Plants/acre**
Ephedra nevadensis	Mormon tea	1 gallon	10
Ambrosia dumosa	burro-weed	1 gallon	35
Encelia farinosa	brittlebush	1 gallon	35
Hymenoclea salsola	cheesebush	1 gallon	10
Opuntia acanthocarpa var. *coloradensis*	buckhorn cholla	1 gallon	15
Atriplex canescens	four-wing saltbush	1 gallon	20
Acacia greggii	catclaw	1 gallon	5
Eriogonum fasciculatum var. *polifolium*	California buckwheat	1 gallon	20
Coleogyne ramosissima	blackbrush	1 gallon	10
Lycium cooperi	Cooper's lycium	1 gallon	5
Larrea tridentata	creosote bush	1 gallon	50
Yucca schidigera	Mohave yucca	1 gallon	5
Pleuraphis rigida	big galleta	1 gallon	20
Total			240

Source: First Solar 2012d. BLM notes that, although this is the seed mix proposed by the Applicant in the Decommissioning Plan, the blackbrush (*Coleogyne ramosissima*) is not reported on the site, and therefore will not be included in the approved plan.

Upon completion of initial re-vegetation efforts, an establishment period would begin. During the establishment period, the following activities would occur:

- *Weed control and general site care would occur throughout the project area. Weeds would be removed before they reach 12 inches in height and before ripening of seeds, at intervals not to exceed 30 days. Weeds would be controlled by cutting off top growth and spraying the stumps with approved herbicide.*
- *Site inspections would monitor for erosion, and repair efforts would include re-direction of water, re-contouring of soil, and re-seeding and mulching.*
- *Performance monitoring would occur on representative re-vegetated sites and reference sites mutually agreed upon by BLM. Monitoring would continue until BLM and other appropriate agencies verify that performance standards have been met. Photographic records would be collected for a minimum of five years. Vegetation data to be collected*

would include identification of all vascular plant species, aerial cover for all vegetation, relative aerial cover for vascular plant species, seedling recruitment, and abundance of woody species saplings. Monitoring would also include assessment of wildlife use of the re-vegetated area.

The performance standard proposed by the Applicant for determining success would be two standard variations of the mean for total aerial vegetative cover, relative aerial cover for each vascular species, and relative cover of native vascular plant species compared to all vegetation present.

2.1.3.5 Design Features and Best Management Practices

The Proposed Action includes numerous features and practices that were included by the Applicant in order to avoid or reduce environmental impacts. The descriptions of the features and practices presented in this section are derived from the August 2011 POD submitted by the Applicant to the BLM, as well as supplemental technical reports, management plans, and responses to agency data requests.

Design Features

As discussed in Section 1, the Applicant's proposed project configuration and design has been modified several times in order to reduce potential impacts. These modifications have included the following *features*:

- Adjustment of Project Configuration Within Study Area. The Applicant has made many modifications to their proposed project area since their original 2006 application in order to avoid or reduce environmental impacts. The Applicant's approach has been to evaluate resources within a larger study area, and then propose smaller project configurations within the study area that are designed to avoid or minimize resource impacts.
- Underground Electrical Collection System within each Block of Solar Arrays. The proposed underground collection system would reduce the visual impact of overhead transmission systems, as well as the potential for avian impact with transmission lines.
- Avoidance of Drainages. The Proposed Action and alternatives would avoid placement of PV modules or any other infrastructure within 100 feet of any significant onsite drainages, thus maintaining pre-project water and sediment flows to downstream areas and avoiding potential stormwater damage.
- Minimal Water Use Required During Operations. Following completion of construction, the only water use for the project would be the use of water for sanitary purposes for onsite staff.
- Pre-Funded PV Module Collection and Recycling Program. First Solar's program for manufacturing and sale of the PV modules includes collection of an up-front fee to cover future costs for packaging, shipping, and recycling of module components.

Resource Surveys and Protective Measures

Surveys designed to identify sensitive cultural and biological resources and stormwater flow systems within the 5,500 acre study area have been completed, and are detailed in resource reports submitted to BLM. The Applicant has used the results of the surveys to site the

proposed facility and alternatives within the study area in a manner which minimizes disturbance to the environment and resources wherever possible. The Applicant would also avoid placement of any facility-related infrastructure, including PV modules, within major active drainages. Employee environmental awareness training, additional surveys, and use of monitors would also be implemented prior to and during and ground-disturbing activities to further ensure that any resources present are identified and avoided. Training and surveys would focus on avoidance of cultural resources, desert tortoises, and migratory and nesting birds. Any resources that could not be avoided would be managed in accordance with plans approved by BLM and other applicable resource agencies.

Best Management Practices (BMPs)

BMPs would be implemented during construction and operations. These would include:

- Limiting work activities to daylight hours unless daytime time temperatures prohibit work in daylight;
- Inspection of vehicles and infrastructure containing fuels to identify spills, and clean-up of spills when they are identified;
- Use of qualified biological monitors to monitor all work activities taking place outside of fenced areas;
- Limiting vegetation removal to the smallest area necessary;
- Limiting construction traffic access, passing, turning, and staging areas to existing roads where possible;
- Maintaining a speed limit of 25 miles per hour;
- General housekeeping and trash management to avoid attracting ravens and other wildlife;
- No dogs or firearms permitted on work site; and
- No plant or wildlife collection permitted except as allowed by facility permits.

Management Plans

Management plans to be followed during project construction and operations include:

- Air Quality Construction Management Plan. The Applicant's Air Quality Construction Management Plan (First Solar 2012c) specifies measures that would be used to comply with requirements of the Mojave Desert Air Quality Management District (MDAQMD). Specifically, the plan describes measures that would be used to avoid or reduce fugitive dust emissions associated with ground disturbance and traffic. These measures include:
    - use of revegetation as soon as possible after site disturbance;
    - sweeping streets of visible soil;
    - suspending earth-moving activities at wind speeds greater than 25 miles per hour;
    - the use of pavement, water, or chemical stabilizers on roads;
    - minimizing the area of disturbance;

- selecting construction equipment based on low emission factors and high energy efficiency;
- Including statements of grading plans instructing contractors that all equipment must be tuned and maintained according to manufacturer specification and that all equipment must be shut off when not in use; and
- Encouraging carpooling by site workers.

- Traffic Control Plan. The Applicant would implement a Traffic Control Plan (First Solar 2012e) that specifies measures that would be used to minimize disruption to local traffic. The Plan specifies the use of flaggers, signage, and temporary lane closures when necessary for delivery of equipment; advance notice of closures to other users of the road; advance notice of closures to emergency service providers; and appointment of a Construction Relations Officer to work with the agencies and local parties on traffic and other issues.
- Emergency Response and Hazardous Materials Management Plan. The Applicant would implement their Emergency Response and Hazardous Materials Management Plan (First Solar 2012b) which specifies measures associated with the management of onsite hazardous materials, fuels, and wastes generated during construction, operations, and decommissioning. This Plan includes the following *features*:
  - Identification of worker duties and responsibilities associated with emergency response;
  - Employee training;
  - Procedures for emergency response and incident reporting;
  - Procedures for storing and handling hazardous materials;
  - Procedures for waste characterization, recycling, and disposal; and
  - Procedures for conducting inspections of hazardous materials and waste storage areas.
- *Fire Prevention Plan. Fire prevention is addressed in the Applicant's Plan of Development (First Solar 2013a). The fire prevention measures include the following:*
  - *The area within 10 feet of the perimeter fence would be cleared of any type of combustible materials.*
  - *All hazardous materials and wastes would be stored within regulatory-compliant containers which would be inspected weekly.*
  - *Signs would be posted in any location where combustible or flammable materials are handled, used, or stored, prohibiting smoking or open flames within 25 feet.*
  - *Vehicles would be required to have spark arresters for internal combustion engines, and mufflers in good working order. Vehicles would be limited to travel and parking on prescribed roadways.*
  - *Fire rules would be posted in areas visible to all employees.*
- Vegetation Management Plan. The Applicant's Vegetation Management Plan (First Solar 2012f) specifies measures to minimize adverse impacts to native vegetation and special status plant species. The Plan includes measures to minimize the area to be graded, and place facility infrastructure in a manner which avoids resources. For resources which cannot be avoided, the Plan defines measures to transplant and/or restore disturbed areas. The Plan includes measures to salvage and transplant succulents such as yucca and cactus species, use salvaged topsoil and native seed to

immediately restore temporarily disturbed areas, and identify timing and methods for revegetation efforts.

- *Integrated* Weed Management Plan. The Applicant would implement *their Integrated* Weed Management Plan (First Solar *2013c*) which defines procedures to minimize the potential for propagation of noxious and invasive weeds due to project construction, operation, and decommissioning. This Plan includes the measures to be taken by the Applicant:
  - The Applicant would follow BLM's Herbicide Use Standard Operating Procedures provided in Appendix B of the Record of Decision for the Final Vegetation Treatments Using Herbicides Programmatic Environmental Impact Statement (BLM 2007).
  - Mowing would only be used as necessary to maintain the height of vegetation so that solar modules are not shaded.
  - Preconstruction surveys would be conducted to identify the presence of noxious weeds.
  - A herbicide use proposal, as developed in coordination with the BLM Weed Coordinator, would be implemented. Herbicides would be limited to those approved by BLM.
  - Ground disturbance would be limited by restricting travel outside of the construction zone, limiting the area occupied by storage and staging areas, and allowing travel only on designated routes.
  - Equipment cleaning sites would be established and used to wash heavy equipment and all vehicles used for ground-disturbing activities.
  - The Applicant would provide training to workers to identify weeds and minimize activities that could propagate weeds.
  - Straw bales and wattles used for erosion control would be certified weed-free.

  The *Integrated* Weed Management Plan discusses how the Applicant would submit a Pesticide Use Proposal (PUP) prior to beginning construction, and would submit Pesticide Application Records (PARs) as required within 24 hours of application. The Plan includes templates for the PUP and PAR, but the PUP has not yet been completed and submitted to BLM.

- Bird and Bat Conservation Strategy. The Applicant would implement their Bird and Bat Conservation Strategy (First Solar 2012g) to identify resident and migratory bird and bat species that could potentially be present, identify project-related activities that could affect individuals or habitat, define measures to be used to minimize the potential for impacts, and establish a monitoring program to evaluate the strategy.

- Raven Management Plan. The Applicant *would implement their* Raven Management Plan (First Solar 2012h*), which addresses* indirect impacts to desert tortoise by eliminating and minimizing attraction of ravens to the maximum extent practicable. The Plan would protect juvenile and hatchling desert tortoises in the project vicinity from predation by common ravens by eliminating or minimizing raven attractants and subsidies such as open water, trash, animal and plant waste materials, and perching, nesting, and roosting sites.

- Desert Tortoise Translocation Plan. The Applicant would implement *their* Desert Tortoise Translocation Plan (First Solar *2013d*) to minimize the mortality of desert

tortoise during project construction, operations, and decommissioning. The procedures in the Plan are based on the Draft Translocation of Mojave Desert Tortoises From Project Sites: Plan Development Guidance (USFWS 2010), and the locations for translocation proposed in the Plan are based on the Desert Tortoise Translocation: Options for Ivanpah Valley (First Solar 2012j). The Plan includes descriptions of habitat conditions, including estimates of numbers of desert tortoises, within the project area. The Plan identifies recipient and control sites, methods to be used to translocate tortoises, and a description of a long-term monitoring and reporting program to evaluate the effectiveness of the translocation effort.

- *Desert Kit Fox and Badger Monitoring and Management Plan. The Applicant would implement their Desert Kit Fox and American Badger Monitoring and Management Plan (First Solar 2013b) to minimize potential impacts to these species. The Plan requires pre-construction burrow surveys, passive re-location of individuals and excavation of their burrows, monitoring of active dens, covering of stockpiles to preclude use by wildlife, and covering of excavations to preclude trapping of kit fox and badgers. The Plan also includes procedures for identifying and disposing of sick, injured, or dead animals, including reporting these instances to the applicable agencies.*
- Storm Water Management Plan. The Applicant would implement their Storm Water Management Plan (First Solar 2012k) to protect the facility from stormwater damage, and to minimize the potential for sedimentation and erosion impacts. The Plan addresses the construction, operation, and maintenance of debris and sediment basins, the manner of site grading to promote sheet flow, and procedures for inspecting and correcting erosion within the PV arrays and at the base of posts supporting the PV modules.
- Decommissioning Plan. The Applicant has submitted a preliminary Closure, Decommissioning, and Reclamation Plan (First Solar 2012d) which summarizes the activities that would take place during the decommissioning process. The Decommissioning Plan addresses removal of project-related infrastructure; reuse, recycling, or disposal of components and wastes; site restoration and revegetation efforts; and cost estimates and funding mechanisms for these activities. The Decommissioning Plan would be revised and re-submitted shortly before project decommissioning to incorporate any up-to-date modifications.
- Environmental Inspection and Compliance Monitoring Plan. To evaluate compliance with regulations and BLM's stipulations and mitigation measures associated with the ROW grant and the approved management plans, the Applicant would implement an Environmental Inspection and Compliance Monitoring Program for both construction and operations. The Applicant would assign a qualified individual to serve as Environmental Manager. This individual would be responsible for developing and implementing the program, including reporting and communicating issues, as required, with BLM, the County, and other agencies, as applicable. The Plan would be developed following issuance of the ROW grant, and would incorporate measures to ensure compliance with mitigation measures identified in the Final EIS, as well as conditions of approval of the grant.

Regulatory-Required Plans

The Applicant would develop and implement plans as required to comply with Federal and state environmental regulations. At a minimum, these are expected to include the following:

- SWPP Plan. As required under the Clean Water Act for construction activities that will disturb more than one acre of land, the Applicant would develop and follow an SWPPP. The SWPPP would define measures to be followed to reduce the potential for erosion and sediment run-off from the site during construction and operations.
- SPCC Plan. In compliance with the EPA's Oil Pollution Prevention Regulations in Title 40 of the Code of Federal Regulations (CFR) Part 112, the Applicant would develop and implement an SPCC Plan to manage the presence of oil-containing transformers.
- Streambed Alteration Agreement. Given the anticipated impacts to California Department of Fish and Wildlife (CDFW) jurisdictional areas, the Applicant would be required to obtain a Streambed Alteration Agreement from the CDFW in accordance with Section 1602 of the California Fish and Game code. This permit would include mitigation measures that would be implemented by the Applicant.

The scope and requirements of these plans are standardized, and the plans would be required to be submitted to the applicable agencies for review and approval. *As above, compliance with these plans would be a condition of the Project's ROW grant.* Also, the Applicant's compliance with the plans would be subject to regulatory agency inspection and, if necessary, enforcement action.

2.2 Proposed Land Use Amendment Decisions

2.2.1 Summary of Land Use Plan Amendment Decisions

The proposed Stateline Solar Farm Project would be located in an area falling under the BLM's CDCA Plan. The CDCA Plan identifies solar energy development as an authorized use of public lands, consistent with the CDCA Plan and NEPA. The proposed site is designated as within the Multiple Use Class "Limited" (MUC-L) category of the BLM's CDCA Plan. *Per the terms of the CDCA Plan, solar energy development is permitted on MUC-L lands after NEPA requirements are met.*

If any of the full action alternatives (alternatives that result in approval of a ROW grant and construction of a solar project) are *approved, in connection with its authorization of a ROW grant the BLM will also have to approve a concurrent amendment to the CDCA Plan that designates* public lands within the area as suitable for solar energy development. The potential LUP amendment decisions being evaluated in the EIS/EIR include:

- PA1 – The CDCA Plan would be amended to identify the Project application area as an *approved site* within the Plan (this is the proposed LUP amendment that would be implemented under Action Alternatives 1, 2, 3 or 4 [see Section 2.3 below]).
- PA2 – The CDCA Plan would be amended to modify the boundaries of the existing Ivanpah DWMA (this LUP amendment would also be implemented under Action Alternatives 1, 2, 3 or 4*, and also under Alternative 6*).
- PA3 – The CDCA Plan would not be amended (this would be associated with the Alternative 5, the No Action Alternative).
- PA4 – The CDCA Plan would be amended to identify the Project application area as unsuitable for any type of solar energy development (this is the No Project Alternative identified as Alternative 6).
- PA5 – The CDCA Plan would be amended to identify the Project application area as suitable for any type of solar energy development (this is the No Project Alternative identified as Alternative 7).

2.2.2 Modification of Boundary of Ivanpah DWMA

In addition to the land use planning decisions by the BLM to approve any of the action alternatives (PA1 above), the BLM is also analyzing amendments to the CDCA Plan (PA2 above) that would alter the boundary of the Ivanpah DWMA.

During scoping, Basin and Range Watch submitted a proposal for the BLM to designate an Ivanpah Valley Area of Critical Environmental Concern (ACEC). The ACEC was proposed by Basin and Range Watch in a petition submitted as a scoping comment letter to the BLM Needles Field Office Manager on October 23, 2011 (BRW 2011). The ACEC, as proposed by Basin and Range Watch, would comprise an area of 129,379 acres within both California and Nevada, including approximately 32,000 acres within the CDCA. The purpose of the nomination was to preserve lands in Ivanpah Valley for protection of biological, visual, and cultural resources.

With respect to the portion of the nominated ACEC in Nevada, lands in Nevada are under the jurisdiction of the Las Vegas Field Office in the Nevada State Office. BLM-Nevada and BLM-California coordinated review of the ACEC nomination, however, BLM-California does not have jurisdiction to amend the Las Vegas Resource Management Plan or put temporary management actions in place in Nevada. Therefore, the Las Vegas Field Office is evaluating the Nevada portion of the nomination area in connection with their Las Vegas Resource Management Plan revision and the Supplemental Draft EIS for the Silver State South Solar Project.

With respect to the portion of the nominated ACEC in California, the CDCA already includes two DWMAs *in that area* encompassing about 312,000 acres that are managed accordingly for recovery of the desert tortoise. These DWMAs were designated in the Northern and Eastern Mojave (NEMO) Amendments to the CDCA Plan in 2002 (BLM 2002), and include the Ivanpah DWMA, which encompasses 37,280 acres of public lands in Ivanpah Valley. The Ivanpah DWMA was established in response to the listing of the desert tortoise as threatened under the state and Federal Endangered Species Acts, designation of critical habitat for the desert tortoise, and publication of the 1994 *Recovery Plan for Desert Tortoise* (USFWS 1994). The Recovery Plan recommended actions to meet recovery criteria, including establishing areas where viable desert tortoise populations are maintained, developing management prescriptions to address threats, provide sufficient habitat that the management strategies would be effective, monitor populations to assess effectiveness, establish environmental education programs, and continue research necessary to assess threats. In response to these recommendations, the NEMO Plan amendments established the Ivanpah DWMA to encompass the northeastern portion of the Ivanpah Critical Habitat Unit for the desert tortoise in Ivanpah Valley. At the time of the NEMO Plan Amendment, the 29,110 acre Northern Ivanpah Valley Unit was not included within the Ivanpah DWMA. The Basin and Range Watch petition proposes to include the Northern Ivanpah Valley Unit as a portion of their proposed Ivanpah ACEC. The BLM acknowledges the value of many of the resources nominated that did not meet the importance criteria, and they will continue to be managed under the CDCA Plan.

In response to the ROW application, BLM identified a need to consider modification of the boundaries of the currently-existing Ivanpah DWMA in order to provide additional protection to resources in the project area. To be eligible for designation as an ACEC, an area must meet the relevance and importance criteria described in 43 CFR 1610.7-2 and BLM Manual 1613. ACECs are designated through the Land Use Planning process.

The BLM's analysis of DWMA boundary modification is presented in Appendix D of this EIS/EIR. The only resource determined by BLM to be both relevant and important was the desert tortoise. Specifically, despite the relatively small, fragmented nature of the nominated area, new information is available which supports establishing additional protections to allow the desert tortoise to persist in the western portion of Ivanpah Valley. As stated in the 1994

Recovery Plan and the NEMO Final EIS, the non-lakebed portions of the valley contain excellent quality desert tortoise habitat and support high densities of tortoises. The area to be included in this modification supports a healthy, viable desert tortoise population. Protocol level surveys conducted prior to the planning of the Ivanpah SEGS project, clearance surveys of the project site and protocol level surveys of the translocation areas surrounding the project site all reflect a viable population persisting in this area. The number of tortoises cleared from Ivanpah SEGS Unit 1 and the Construction Logistics Area result in a calculated density of 19.34 desert tortoises/square mile (USFWS 2011). This figure includes a juvenile (<160 millimeter) density of 8.29 desert tortoise/square mile, which indicates positive levels of recruitment within the population. In addition, in 2011, a revised Recovery Plan (USFWS 2011) was developed which re-delineated the recovery units.

In addition to these comprehensive density estimates that were not available when the DWMA was established, the development pressure on this area has increased substantially. Development was originally anticipated to occur along I-15 (BLM 2002), which would have left large tracts of the valley undisturbed and enabled the valley to continue to support a viable desert tortoise population, despite the fragmentation issues. This area may not be as isolated as described in the 2002 NEMO Plan and this population may play a more important role in the greater meta-population than previously anticipated.

The BLM has determined that special management attention is needed for the desert tortoise based on the approval of an Action Alternative, and has identified a need to modify the boundary of the Ivanpah DWMA, as it was established in 2002, to align its boundaries with those of the Ivanpah Critical Habitat Unit (CHU) and the Eastern Mojave Recovery Unit by including a portion of the Northern Ivanpah Valley Unit. Modification of the DWMA boundary would also serve to provide protection for translocated tortoises by limiting future land uses in the translocation areas. Such a modification addresses the Basin and Range Watch's nomination.

The portion of the Northern Ivanpah Valley Unit to be included would be the original 29,110 acre area, but without the acreage associated with the Ivanpah SEGS (3,471 acres), the CalTrans Joint Port of Entry (133 acres) and, if approved, the Stateline Solar facility (2,143 acres for the Proposed Action). In addition, the boundary of the DWMA would be revised on the Ivanpah Dry Lake to allow land sailing in this area which does not support tortoise habitat. This modification would remove 2,997 acres that are currently in the DWMA from the final DWMA boundaries. Therefore, the total acreage added under the Proposed Action would be *23,363* acres, and the reduction of 2,997 acres, resulting in a total acreage within the modified DWMA of *57,646* acres. The total acreage to be added to the existing 37,280 acres DWMA would vary under the other various action alternatives, as calculated and presented in Section 4.6, Lands and Realty. A map showing the current and proposed revised boundaries of the DWMA are shown in Figure 2-1.

The boundary modification would also vary under the different No Project Alternatives. Under the No Action Alternative, Alternative 5, the boundary modification would not be made. Under Alternative 6, in which the project would not be approved and the project area would be identified in the CDCA Plan as not suitable for solar development, the boundary modification would be made, and would include the entire 29,110 acre area except for the two projects (Ivanpah SEGS and Joint Port of Entry) which have already been approved. Under Alternative 7, in which the project would not be approved and the project area would be identified in the CDCA Plan as suitable for solar development, the boundary modification would not be made because the configuration of any future solar applications is not known.

The management prescriptions for the current Ivanpah DWMA were developed for the protection of desert tortoises, and are defined in Appendix A, Section A.2, of the NEMO Final

EIS (BLM 2002). These same prescriptions would apply to the expanded portion of the DWMA. This area would be incorporated into the existing Ivanpah DWMA and would adopt all associated land use restrictions, including:

1. Authorized ground-disturbing activities shall normally be authorized only between November 1 and March 1. If ground-disturbing activities must be authorized outside this window, an on-site biological monitor shall be required throughout activities, as well as other stipulations to prevent take.
2. New surface disturbing projects shall include specific design features (see mitigation measures in Attachment 1 of Appendix A of the NEMO Final EIS) to minimize potential impacts to desert tortoise and desert tortoise habitat.
3. Reclamation would be required for activities that result in loss or degradation of desert tortoise habitat within the desert tortoise wildlife management area, to as close to pre-disturbance condition as practicable.
4. Cumulative new surface disturbance on public lands administered by the BLM within any desert tortoise wildlife management area shall be no more than one percent of BLM Lands.
5. Compensation for disturbances of public lands within the desert tortoise ACEC's shall be required at the rate of five acres for each acre disturbed.

Concurrent with this EIS/EIR, the BLM is working with the U.S. Fish and Wildlife Service (USFWS), the California Energy Commission, and the California Department of Fish and Wildlife to develop the Desert Renewable Energy Conservation Plan, Habitat Conservation Plan, and Possible Land Use Plan Amendment (DRECP). Scoping for the DRECP was announced by a Notice of Intent in the Federal Register on July 29, 2011. (76 Fed. Reg. 45606). The DRECP will comprehensively address how the BLM will conserve ***habitat*** and species pursuant to FLPMA while facilitating the timely permitting of renewable energy projects.

2.3 Action Alternatives, Including the Proposed Action

2.3.1 Alternative 1: Proposed Action

Under this alternative, the BLM and County would take the following actions:

- BLM would approve the proposed ROW grant for the Alternative 1 site configuration, which totals 2,143 acres;
- BLM would amend the CDCA Plan to identify the Desert Stateline Solar Farm facility ***site acreage as an area suitable for solar development*** within the Plan;
- BLM would modify the boundary of the existing Ivanpah DWMA, as described above in Section 2.2.2;
- BLM would modify the designations of open routes; and
- The County would issue well permits.

The proposed Project consists of the construction, operation, maintenance, and decommissioning of PV solar array and associated facilities necessary to generate 300 MW of electrical energy. The facility would be located near the California-Nevada state line in eastern San Bernardino County, California (Figure 1-1). The Project site is located approximately 2 miles south of the California-Nevada border and 0.5 mile west of I-15. Access to the Project site is via Yates Well Road off I-15.

The project would be located entirely on BLM-administered land on alluvial fan sediments on the western side of Ivanpah Dry Lake. The facility would also be located approximately 0.5 miles

north of the Primm Valley Golf Course. The casinos, hotels, and other development associated with Primm, Nevada, are located approximately 2 miles to the northeast of the site. The Stateline Wilderness Area is located approximately 0.5 miles north of the northern boundary of the proposed location.

The proposed facility would encompass 2,143 acres in a single, contiguous site footprint (Figure 1-2). A total of 253 PV arrays, each with an associated PCS, would be located on the project site, designed to produce up to 300 MW of energy. The arrays would be connected to 12 PVCS units distributed throughout the arrays. A 220-kV electrical transmission line passes near the proposed site, facilitating interconnection of the proposed facility and transmission of its renewable energy output to key load centers in region. The project would connect to this transmission line at the Ivanpah Substation through a *2.7*-mile long gen-tie line proposed on a 160-foot wide BLM ROW.

The Proposed Action would also include translocation of desert tortoises into an area as directed by USFWS and BLM. The Applicant's Draft Desert Tortoise Translocation Summary (First Solar 2012i) identified and evaluated four potential translocation sites within the East Mojave Recovery Unit. These sites include:

- Perimeter Site, comprising 4,700 acres directly surrounding the north, west, and south sides of the facility;
- Stateline North Site, comprising 2,500 acres in the Stateline Pass area;
- Mesquite Site, comprising 2,580 acres in Mesquite Valley; and
- East Lake Site, comprising 3,000 acres on the eastern side of Ivanpah Dry Lake.

The selected area would not be included within the ROW grant, and would continue to be available for current uses (grazing, recreation) and future uses that may be applied for under the FLMPA, and that would be in conformance with the CDCA Plan, NEMO Amendments, and land uses restrictions associated with the applicable DWMA (existing or newly designated). Translocation would be done in accordance with procedures established by BLM, USFWS, and CDFW.

The construction of the Stateline Solar Farm Project would employ an average of approximately 400 on-site workers during the 2 to 4 year construction period, and 10 to 12 full time equivalent workers during operation.

The Proposed Action would include the construction and operation of two groundwater production wells; the primary well to be located on the southeastern corner of the facility, and the secondary well located approximately 4,250 feet west of facility. In addition, three groundwater monitoring wells would be installed to evaluate potential impacts to groundwater availability and quality. The production wells would be 12 inches in diameter and 670 feet deep, with a screened interval located at a depth of 430 to 630 feet below ground surface. *The depths of the monitoring wells would be determined, on a site-specific basis, to ensure adequate monitoring of the elevation of the groundwater table.* Water would be conveyed through a 6-inch diameter above-ground pipeline to 5 temporary water storage ponds spaced throughout the solar arrays. The ponds would be constructed to prevent avian and wildlife access. Water trucks would acquire water from the ponds, and transport the water to its point of use during construction.

Under Alternative 1, 3.4 miles of existing routes that are designated as open by BLM would be incorporated into the facility, and would be closed. These routes would be re-located around the project perimeter, and would the new routes would be designated by BLM as open routes. The length of the new open routes would be 3.1 miles.

Site preparation for Alternative 1 would consist of site clearing and grading to maintain the entire solar array at a consistent grade limited to within no more than 3 percent. The Applicant estimates that 61 percent of the site would be cleared by the disk, contour grade, and roll method, using tractors pulling disking equipment. The other 39 percent of the site would require grading using the cut and fill method, completed by bulldozers, backhoes, and other heavy equipment. Clearing and grading for roads and smaller construction areas would be accomplished using bulldozers, road graders, or other standard earth-moving equipment.

Clearing within the solar array field would be accomplished using conventional farming equipment including tractors with disking equipment. This method would incorporate the underground root structure of disturbed plants, top soil nutrients, and seed base into the soils. Vibratory rollers would also be used in the solar array field to compact the soil and even out the surface after the disking is complete.

To minimize the potential for erosional flow within the array area, the entire site would be graded to a flat surface. Vegetation would be removed, and the topography would be leveled using the cut and fill method (for approximately 39 percent of the site) and the disk, contour, and roll method (for the other 61 percent of the site). The sheet grading would promote sheet flow and minimize the potential for erosional channels to develop. Site inspections would be performed after each significant storm event, as well as bi-annually. Any rills that develop ranging from 4 to 12 inches deep would be repaired by hand compaction. Rills larger than 12 inches deep would be repaired by filling and compacting with small ATVs or equivalent. Similarly, inspections and repair efforts would include evaluating and addressing scour around posts supporting the PV modules.

Table 2-4 provides the total acreage associated with the various components of the proposed facility. The areas include three general categories: the PV array area surrounded by the fenceline; the transmission ROW, and the access road ROW. The PV array area would encompass, within the fenceline, all PV solar arrays, internal access and maintenance roads, stormwater management structures, groundwater wells and pipelines, O&M Building, fencing, project substation, and guard shack. In addition, the temporary water storage ponds, construction trailer area, and construction laydown areas would all be located within the fenced PV array area. These facilities would be used temporarily during construction, and then would be reclaimed and covered with solar arrays in the later stages of construction.

For the PV array area, the final ROW requirement is larger than the area of *long-term* disturbance because major stormwater drainages within the fenced area would be left undeveloped. Similarly, the ROW requirements for the transmission corridor and the access road are larger than the *long-term* disturbance area because each of these linear facilities comprises a corridor of a minimum width, within which the transmission lines and roads would be constructed. The roads that would be re-routed outside of the project fenceline would constitute new *long-term* disturbance, but would not be included within the Applicant's ROW grant.

Table 2-4. Acres of Disturbance and ROW for Proposed Action (Alternative 1)

Project Component	*Long-term* Disturbance	Temporary Disturbance	Final ROW
PV Array Area – includes PV field, internal roads, drainage structures, O&M Building, Guard Shack, and Substation	*1,987*	-	*2,081*
Roads and re-routed pipelines outside fenceline	17	-	0
Transmission ROW	9	4	41
Access Roads (includes SCE power service line)	8	-	*15*
Western Wells and Access Road	*2*	*1*	*3*
Total	2,023	*5*	2,143

2.3.2 Alternative 2: 2,385 Acre Alternative

Under this alternative, the BLM and County would take the following actions:

- BLM would approve the proposed ROW grant for the Alternative 2 site configuration, which totals 2,385 acres;
- BLM would amend the CDCA Plan to identify the Desert Stateline Solar Farm facility *site acreage as an area suitable for solar development* within the Plan;
- BLM would modify the boundary of the existing Ivanpah DWMA, as described above in Section 2.2.2;
- BLM would modify the designations of open routes; and
- The County would issue well permits.

This alternative is conceptually similar to the Proposed Action (Alternative 1). In Alternative 2, the Applicant would construct, operate, maintain, and decommission the proposed Stateline Solar Farm Project, a 300-MW solar PV facility encompassing 2,385 acres on a bifurcated footprint. The general location of the alternative, including proximity to the California-Nevada border, I-15, Primm, and Ivanpah Dry Lake, is approximately the same as described for Alternative 1. The location of Alternative 2 is shown in Figure 2-2, and the layout is shown is shown Figure 2-3. The Alternative was developed by the Applicant for BLM to consider, as it reduces impacts to resources located to the north of the Primm Valley Golf Course.

The northern portion of Alternative 2 partially overlaps the project area proposed for Alternative 1. Under Alternative 2, the northern portion of the project area proposed in Alternative 1, or approximately 540 acres, would not be included within the project ROW. This configuration would site the northern boundary of the facility approximately 1.0 miles from the Stateline Wilderness Area.

In addition to the solar arrays located north of Primm Valley Golf Course, Alternative 2 would include an area of solar arrays located on the southwest side of the golf course. This southern portion would comprise approximately 640 acres. The southern portion would directly touch the golf course property at a single point on the southwestern corner of the golf course.

Alternative 2 would also generate 300 MW of electrical energy from a total of 253 PV arrays, each with an associated PCS. The arrays would be connected to 13 PVCS units distributed throughout the arrays. The project would connect to this transmission line at the Ivanpah Substation through a *2.7*-mile long gen-tie line proposed on a 160-foot wide BLM transmission ROW.

Even though the output and total number of PV arrays is the same as that proposed for Alternative 1, Alternative 2 would require a larger area for the ROW. This is because the acreage requirement for the ROW is driven not just by the number of PV arrays, but also by their configuration. The ROW area must include the project fence and buffer areas both outside and inside the fenceline, so the longer the fenceline is, the larger the required ROW area. In general, the most space-efficient manner in which to arrange the arrays, fences, and buffer areas, in order to minimize the required ROW area, would be a circular configuration. Any diversion from a circular configuration makes the perimeter of the facility longer, and therefore extends the length of required fencing, including its buffer requirements. This lengthening of the fence and buffer areas increases the acreage required for the ROW. In the case of Alternatives 1 and 2, Alternative 1 most closely approximates a circle in configuration, and therefore has the smallest acreage footprint. Alternative 2, on the other hand, has a much longer perimeter because it has been split into two separate parcels. This longer perimeter results in Alternative 2 having a larger ROW acreage requirement than Alternative 1.

Alternative 2 would also include translocation of desert tortoises into an area as directed by USFWS and BLM. The Applicant's Draft Desert Tortoise Translocation Summary (First Solar 2012i) identified and evaluated four potential translocation sites within the East Mojave Recovery Unit. These sites include:

- Perimeter Site, comprising 4,700 acres directly surrounding the north, west, and south sides of the facility;
- Stateline North Site, comprising 2,500 acres in the Stateline Pass area;
- Mesquite Site, comprising 2,580 acres in Mesquite Valley; and
- East Lake Site, comprising 3,000 acres on the eastern side of Ivanpah Dry Lake.

The selected area would not be included within the ROW grant, and would continue to be available for current uses (grazing, recreation) and future uses that may be applied for under the FLMPA, and that would be in conformance with the CDCA Plan, NEMO Amendments, and land uses restrictions associated with the applicable DWMA (existing or newly designated). Translocation would be done in accordance with procedures established by BLM, USFWS, and CDFW.

The construction, operation, and decommissioning of Alternative 2 would require the same level of workforce, materials delivery, fuel use, and duration of schedule as the Proposed Action.

Alternative 2 would include the construction and operation of two groundwater production wells, one to be located on the southeastern corner of the northern portion of the facility, and the other to be located on the eastern boundary of the southern portion of the facility. In addition, three groundwater monitoring wells would be installed to evaluate potential impacts to groundwater availability and quality. Two of these wells would be located in the northern portion of the facility, and one would be located within the southern portion. The production wells would both be 12 inches in diameter and 670 feet deep, with a screened interval located at a depth of 430 to 630 feet below ground surface. *The depths of the monitoring wells would be determined, on a site-specific basis, to ensure adequate monitoring of the elevation of the groundwater table.* Water would be conveyed through 6-inch diameter above-ground pipelines to 4 temporary water storage ponds. Three of those ponds would be located in the northern portion of the facility, and one would be located in the southern portion of the facility. Water trucks would acquire water from the ponds, and transport the water to its point of use during construction.

Under Alternative 2, 2.9 miles of existing routes that are designated as open by BLM would be incorporated into the facility, and would be closed. These routes would be re-located around the project perimeter, and would the new routes would be designated by BLM as open routes. The length of the new open routes would be 2.6 miles.

Site preparation for Alternative 2 would be the same as Alternative 1, consisting of site clearing and grading to maintain the entire solar array at a consistent grade limited to within no more than 3.0 percent. Clearing within the solar array field would be accomplished using conventional farming equipment including tractors with disking equipment. This method would incorporate the underground root structure of disturbed plants, top soil nutrients, and seed base into the soils. Vibratory rollers would also be used in the solar array field to compact the soil and even out the surface after the disking is complete. The sheet grading would promote sheet flow and minimize the potential for erosional channels to develop. Site inspections would be performed after each significant storm event, as well as bi-annually. Any rills that develop ranging from 4 to 12 inches deep would be repaired by hand compaction. Rills larger than 12 inches deep would be repaired by filling and compacting with small ATVs or equivalent. Similarly, inspections and repair efforts would include evaluating and addressing scour around posts supporting the PV modules.

Table 2-5 provides the total acres of *long-term* and temporary disturbance associated with Alternative 2. Like the Proposed Action, the final ROW requirement is larger than the area of *long-term* disturbance because the transmission and access road corridors have a minimum width within which the facilities would be constructed. The roads that would be re-routed outside of the project fenceline would constitute new *long-term* disturbance, but would not be included within the Applicant's ROW grant.

Table 2-5. Acres of Disturbance and ROW for Alternative 2

Project Component	*Long-term* Disturbance	Temporary Disturbance	Final ROW
PV Array Area – includes PV field, internal roads, drainage structures, O&M Building, Guard Shack, and Substation	2,310	-	2,310
Roads and re-routed pipelines outside fenceline	10	-	0
Transmission ROW	12	4	53
Access Roads (includes SCE power service line)	12	-	22
Western Wells and Access Road	*0*	*0*	*0*
Total	2,344	4	2,385

2.3.3 Revised Alternative 3: *1,685* Acre Alternative

As discussed in Section 1.0 and Section 2.8.2, Revised Alternative 3 was developed by the Applicant and BLM in response to public comments on the Draft EIS/EIR. The Revised Alternative 3 is included entirely within the original Alternative 3 footprint, but incorporates modifications intended to reduce impacts to biological resources and other ROW-holders. In addition, the alternative incorporates a modified site preparation technique to reduce impacts to vegetation and hydrology.

Under *the Revised Alternative 3*, the BLM and County would take the following actions:

- BLM would approve the proposed ROW grant for the *Revised* Alternative 3 site configuration, which totals *1,685* acres;
- BLM would amend the CDCA Plan to identify the Project *site acreage as an area suitable for solar development* within the Plan;
- BLM would modify the boundary of the existing Ivanpah DWMA, as described above in Section 2.2.2;
- BLM would modify the designations of open routes; and
- The County would issue well permits.

This alternative is conceptually similar to the Proposed Action (Alternative 1). In *Revised* Alternative 3, the Applicant would construct, operate, maintain, and decommission the proposed Stateline Solar Farm Project, a 300-MW solar PV facility encompassing *1,685* acres on a single, contiguous footprint. The general location of the alternative, including proximity to the California-Nevada border, I-15, Primm, the Primm Valley Golf Course, and the Stateline Wilderness Area is approximately the same as described for Alternative 1. The location of *Revised* Alternative 3 is shown in Figure 2-4, and the layout is shown is shown Figure 2-5.

The solar arrays under Revised Alternative 3 would be bifurcated into a northern and a southern section, in order to avoid inclusion of the Primmadonna groundwater pipeline and access road within the ROW. The bulk of the arrays would be located to the south of the pipeline and road, and a small section of arrays would also be constructed to the north. Both sections of arrays would be separately fenced, leaving the access road open between the fences. The access

road would have a tortoise trench and grate installed at each end to preclude tortoises from entering the area and becoming trapped between the fences. The north and south sections of the facility would have a 34.5 kV overhead transmission line strung over the Primm pipeline and access road. The height of the line would be determined based on CPUC requirements, and would be designed to not interfere with vehicles passing on the road beneath. The fence on either side of the access road would each have two access gates to allow construction traffic to pass between the sites. The two crossings would be improved with gravel and metal plates to protect the buried pipeline. A temporary water pipeline would also be placed within the road crossing. No permanent facilities would be placed within the Primm ROW, except for the transmission line which would be strung over the ROW.

Revised Alternative 3 was developed by BLM, in coordination with the Applicant, to increase the area for potential tortoise connectivity between *the solar facility and Metamorphic Hill to the west, and the slope of the Stateline Hills to the north. Under Alternative 1, the facility would directly about the rocky slopes of Metamorphic Hill. Under Revised Alternative 3, the project fenceline would be separated from the base of Metamorphic Hill by approximately 1,250 feet at its closest point. Similarly, the northern fenceline of Alternative 3 would be 3,000 feet from the slope of the Stateline Hills, as compared to 1,875 feet in Alternative 1.*

The acreage associated with *Revised* Alternative 3 partially overlaps the project area proposed for Alternative 1. However, this configuration shifts the project footprint to the east, placing the eastern boundary of the facility in close proximity to Ivanpah Dry Lake.

Revised Alternative 3 would also generate 300 MW of electrical energy from a total of 253 PV arrays, each with an associated PCS. The arrays would be connected to 12 PVCS units distributed throughout the arrays. The project would connect to this transmission line at the Ivanpah Substation through a *2.7*-mile long gen-tie line proposed on a 160-foot wide BLM transmission ROW.

Revised Alternative 3 would also include translocation of desert tortoises into an area as directed by USFWS and BLM. The Applicant's Draft Desert Tortoise Translocation Summary (First Solar 2012i) identified and evaluated four potential translocation sites within the East Mojave Recovery Unit. These sites include:

- Perimeter Site, comprising 4,700 acres directly surrounding the north, west, and south sides of the facility;
- Stateline North Site, comprising 2,500 acres in the Stateline Pass area;
- Mesquite Site, comprising 2,580 acres in Mesquite Valley; and
- East Lake Site, comprising 3,000 acres on the eastern side of Ivanpah Dry Lake.

The selected area would not be included within the ROW grant, and would continue to be available for current uses (grazing, recreation) and future uses that may be applied for under the FLMPA, and that would be in conformance with the CDCA Plan, NEMO Amendments, and land uses restrictions associated with the applicable DWMA (existing or newly designated). Translocation would be done in accordance with procedures established by BLM, USFWS, and CDFW.

The construction, operation, and decommissioning of *Revised* Alternative 3 would require the same level of workforce, materials delivery, fuel use, and duration of schedule as the Proposed Action.

Revised Alternative 3 would include the construction and operation of two groundwater production wells; the primary well to be located on the southeastern corner of the facility, and the secondary well located approximately 4,250 feet west of facility. In addition, three

groundwater monitoring wells would be installed to evaluate potential impacts to groundwater availability and quality. The production wells would be 12 inches in diameter and 670 feet deep, with a screened interval located at a depth of 430 to 630 feet below ground surface. *The depths of the monitoring wells would be determined, on a site-specific basis, to ensure adequate monitoring of the elevation of the groundwater table.* Water would be conveyed through a 6-inch diameter above-ground pipeline to 5 temporary water storage ponds spaced throughout the solar arrays. Water trucks would acquire water from the ponds, and transport the water to its point of use during construction.

Under Revised Alternative 3, 2.6 miles of existing routes that are designated as open by BLM would be incorporated into the facility, and would be closed. These routes would be re-located around the project perimeter, and would the new routes would be designated by BLM as open routes. The length of the new open routes would be 2.0 miles.

Site preparation for Revised Alternative 3 would be based on subdivision of the project site into three zones, as shown in Figure 2-6. The site preparation method in each zone would vary, as follows:

- *In Zone 1, the portion of the site near Ivanpah Dry Lake which is dominated by fine to sandy soil with minimal rocks and ephemeral washes that are less than 6 inches in depth, vegetation would be mowed. The use of grading or disk and roll methods would be minimized to the extent practicable. Areas with spot elevations that exceed 3.0 percent in slope would be rolled or dragged to meet the 3.0 percent grade requirement. The Applicant estimates that the total area of Zone 1 would be 509 acres, of which approximately 384 acres would be mowed, 68 acres subjected to disk and roll, and 57 acres graded.*
- *Zone 2 is the central part of the site where soils are gravelly with rocks, and ephemeral washes are greater than 6 inches deep. In this area, vegetation will be mowed to the extent possible, with disk and roll, dragging, and spot grading methods being used to achieve the 3 percent grade as needed. The Applicant estimates that the total area of Zone 2 would be 748 acres, of which approximately 190 acres would be mowed, 380 acres subjected to disk and roll, and 177 acres graded.*
- *Zone 3 is the highest elevation portion of the site where soils are rocky, and ephemeral washes are greater than 6 inches deep. In this area, mowing may occur in flat areas, but most of the area would be graded flat. The Applicant estimates that the total area of Zone 3 would be 321 acres, of which approximately 51 acres would be mowed, 77 acres subjected to disk and roll, and 194 acres graded.*

As in Alternative 1, the sheet grading would promote sheet flow and minimize the potential for erosional channels to develop. Site inspections would be performed after each significant storm event, as well as bi-annually. Any rills that develop ranging from 4 to 12 inches deep would be repaired by hand compaction. Rills larger than 12 inches deep would be repaired by filling and compacting with small ATVs or equivalent. Similarly, inspections and repair efforts would include evaluating and addressing scour around posts supporting the PV modules.

Table 2-6 provides the total acres of *long-term* and temporary disturbance associated with *Revised* Alternative 3. Like the Proposed Action, the final ROW requirement is larger than the area of *long-term* disturbance because the transmission and access road corridors have a minimum width within which the facilities would be constructed. The roads that would be re-routed outside of the project fenceline would constitute new *long-term* disturbance, but would not be included within the Applicant's ROW grant.

Table 2-6. Acres of Disturbance and ROW for *Revised* Alternative 3

Project Component	*Long-term* Disturbance	Temporary Disturbance	Final ROW
PV Array Area – includes PV field, internal roads, drainage structures, O&M Building, Guard Shack, and Substation	*1,609*	-	*1,609*
Roads re-routed outside fenceline	*14*	-	0
Transmission ROW	*18*	*5*	*55*
Access Roads (includes SCE power service line)	*8*	-	*20*
Western Wells and Access Road	*2*	*1*	*3*
Total	*1,651*	4	*1,685*

2.3.4 Alternative 4: Reduced Acreage Alternative

This alternative was developed and analyzed in the Draft EIS/EIR as an alternative that would cover a smaller area than any of the other alternatives evaluated at that time. As a result, it was named the "Reduced Acreage Alternative". Following review of public comments on the Draft EIS/EIR, BLM and the Applicant developed revised Alternative 3, which has even a smaller acreage requirement. However, for continuity, the name of "Reduced Acreage Alternative" is retained.

Under this alternative, the BLM and County would take the following actions:

- BLM would approve the proposed ROW grant for the Alternative 4 site configuration, which totals 1,766 acres;
- BLM would amend the CDCA Plan to identify the Desert Stateline Solar Farm facility *site acreage as an area suitable for solar development* within the Plan;
- BLM would modify the boundary of the existing Ivanpah DWMA, as described above in Section 2.2.2;
- BLM would modify the designations of open routes; and
- The County would issue well permits.

This alternative is conceptually similar to the Proposed Action (Alternative 1). In Alternative 4, the Applicant would construct, operate, maintain, and decommission the proposed Project with a reduced generating capacity and facility footprint. Specifically, Alternative 4 would involve the construction of a 232-MW solar PV facility encompassing 1,766 acres on a single, contiguous footprint. The general location of the alternative, including proximity to the California-Nevada border, I-15, Primm, the Primm Valley Golf Course, and the Stateline Wilderness Area is approximately the same as described for Alternative 2. The location of Alternative 4 comprises the northern portion of the bifurcated alternative in Alternative 2, *and is* shown in Figure 2-*7*. The Alternative was developed by BLM to allow consideration of a facility that would generate a lower output, but with a potentially larger reduction in resource impacts by occupying a smaller land area.

Like Alternative 2, the acreage associated with Alternative 4 partially overlaps the project area proposed for Alternative 1. However, this configuration shifts the project footprint to the east, placing the eastern boundary of the facility in close proximity to Ivanpah Dry Lake.

Alternative 4 would generate 232 MW of electrical energy from approximately 184 PV arrays, each with an associated PCS. The arrays would be connected to approximately 9 PVCS units distributed throughout the arrays. The project would connect to this transmission line at the Ivanpah Substation through a *2.7* mile long gen-tie line proposed on a 160-foot wide BLM transmission ROW.

Alternative 4 would also include translocation of desert tortoises into an area as directed by USFWS and BLM. The Applicant's Draft Desert Tortoise Translocation Summary (First Solar 2012i) identified and evaluated four potential translocation sites within the East Mojave Recovery Unit. These sites include:

- Perimeter Site, comprising 4,700 acres directly surrounding the north, west, and south sides of the facility;
- Stateline North Site, comprising 2,500 acres in the Stateline Pass area;
- Mesquite Site, comprising 2,580 acres in Mesquite Valley; and
- East Lake Site, comprising 3,000 acres on the eastern side of Ivanpah Dry Lake.

The selected area would not be included within the ROW grant, and would continue to be available for current uses (grazing, recreation) and future uses that may be applied for under the FLMPA, and that would be in conformance with the CDCA Plan, NEMO Amendments, and land uses restrictions associated with the applicable DWMA (existing or newly designated). Translocation would be done in accordance with procedures established by BLM, USFWS, and CDFW.

The construction, operation, and decommissioning of Alternative 4 would require the same level of workforce, materials delivery, and fuel use as the Proposed Action. However, because of the smaller project size, the duration of construction would be shorter.

Alternative 4 would include the construction and operation of two groundwater production wells; the primary well to be located on the southeastern corner of the facility, and the secondary well located approximately 4,250 feet west of facility. In addition, three groundwater monitoring wells would be installed to evaluate potential impacts to groundwater availability and quality. The production wells would be 12 inches in diameter and 670 feet deep, with a screened interval located at a depth of 430 to 630 feet below ground surface. *The depths of the monitoring wells would be determined, on a site-specific basis, to ensure adequate monitoring of the elevation of the groundwater table.* Water would be conveyed through a 6-inch diameter above-ground pipeline to 3 temporary water storage ponds spaced throughout the solar arrays. Water trucks would acquire water from the ponds, and transport the water to its point of use during construction.

Under Alternative 4, 2.9 miles of existing routes that are designated as open by BLM would be incorporated into the facility, and would be closed. These routes would be re-located around the project perimeter, and would the new routes would be designated by BLM as open routes. The length of the new open routes would be 2.6 miles.

Site preparation for Alternative 4 would be the same as Alternative 1, consisting of site clearing and grading to maintain the entire solar array at a consistent grade limited to within no more than 3 percent. Clearing within the solar array field would be accomplished using conventional farming equipment including tractors with disking equipment. This method would incorporate the underground root structure of disturbed plants, top soil nutrients, and seed base into the soils. Vibratory rollers would also be used in the solar array field to compact the soil and even out the surface after the disking is complete. The sheet grading would promote sheet flow and minimize the potential for erosional channels to develop. Site inspections would be performed after each significant storm event, as well as bi-annually. Any rills that develop ranging from 4 to 12 inches deep would be repaired by hand compaction. Rills larger than 12 inches deep would be repaired by filling and compacting with small ATVs or equivalent. Similarly, inspections and repair efforts would include evaluating and addressing scour around posts supporting the PV modules.

Table 2-7 provides the total acres of *long-term* and temporary disturbance associated with Alternative 4. Like the Proposed Action, the final ROW requirement is larger than the area of *long-term* disturbance because the transmission and access road corridors have a minimum width within which the facilities would be constructed. The roads that would be re-routed outside of the project fenceline would constitute new *long-term* disturbance, but would not be included within the Applicant's ROW grant.

Table 2-7. Acres of Disturbance and ROW for Alternative 4

Project Component	*Long-term* Disturbance	Temporary Disturbance	Final ROW
PV Array Area – includes PV field, internal roads, drainage structures, O&M Building, Guard Shack, and Substation	*1,689*	-	*1,688*
Roads and re-routed pipelines outside fenceline	10	-	0
Transmission ROW	12	4	53
Access Roads (includes SCE power service line)	10	-	22
Western Wells and Access Road	*2*	*1*	*3*
Total	1,725	*5*	1,766

As discussed in the Purpose and Need (Section 1.1), one objective for the project is to "create a clean, renewable source of electricity that helps meet California's growing demand for power and helps fulfill national and state renewable energy goals and greenhouse gas (GHG) emissions reduction requirements". Because the power output of Alternative 4 would be lower than that of the other action alternatives, Alternative 4 would not be as effective in achieving the renewable energy goals and GHG emission reductions as the other action alternatives. The State's renewable energy goals would have to be met using other alternative energy projects at other locations.

Additionally, as discussed for BLM's Purpose and Need, the reduced output under Alternative 4 means that this Alternative would not be as effective as Alternatives 1, 2, and 3 in meeting the mandates under Executive Order 13212, dated May 18, 2001, Secretarial Order 3285, dated March 11, 2009, and amended as 3285A1 on February 22, 2010, and the *President's Climate Action Plan of June 25, 2013*.

2.4 No Action Alternatives

2.4.1 Alternative 5: No Issuance of a ROW Grant, No County Approval, No LUP Amendment

Under this alternative, the BLM and County would take the following actions:

- BLM would not approve the proposed ROW grant for the facility;
- BLM would not amend the CDCA Plan;
- BLM would not modify the boundary of the existing Ivanpah DWMA;
- BLM would not modify the designations of open routes; and
- The County would not issue well permits.

As a result, no solar energy project would be constructed, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, no new structures or facilities would be constructed or operated on the site and no new ground disturbance would occur. The land on which the project is proposed would become available to other uses that are consistent with the CDCA Plan. *New*

applications for solar development would be subject to the Solar PEIS ROD, which makes this area unavailable for utility scale solar development. BLM's management of the existing Ivanpah DWMA and open routes on the project site would continue as they are today.

This alternative is *consistent with the* Council on Environmental Quality's (CEQ) *NEPA implementation* regulations. (40 CFR 1502.14(d)). The No Action alternative is the only alternative that must be analyzed in an EIS that does not respond to the purpose and need for the action. It provides a useful baseline for comparison of environmental effects (including cumulative effects) and demonstrates the consequences of not meeting the purpose and need.

2.5 No Project Alternatives

2.5.1 Alternative 6: No Issuance of a ROW Grant, No County Approval, Approval of a LUP Amendment to Exclude Solar Energy Development on the Site of the Proposed Action

Under this alternative, the BLM and County would take the following actions:

- BLM would not approve the proposed ROW grant for the facility;
- BLM would amend the CDCA Plan to identify the site as unsuitable for solar energy development;
- *BLM would modify the boundary of the existing Ivanpah DWMA;*
- BLM would not modify the designations of open routes; and
- The County would not issue well permits.

As a result of implementing this alternative, no solar energy project would be constructed on the site, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Because the CDCA Plan would be amended to identify the site as unsuitable for future solar energy development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. Existing uses of the land, including its inclusion within the Clark Mountain Grazing Allotment, would continue.

Under this alternative, BLM would modify the boundaries of the Ivanpah DWMA to include the entire 29,110 acre area. None of this area would be excluded to accommodate acreage for a solar facility.

2.5.2 Alternative 7: No Issuance of a ROW grant, No County Approval, Approval of a LUP Amendment to Approve Solar Energy Development on the Site of the Proposed Action

Under this alternative, the BLM and County would take the following actions:

- BLM would not approve the proposed ROW grant for the facility;
- BLM would amend the CDCA Plan to identify the site as suitable for solar energy development;
- BLM would not modify the boundary of the existing Ivanpah DWMA;
- BLM would not modify the designations of open routes; and
- The County would not issue well permits.

As a result of implementing this alternative, no solar energy project would be constructed on the site at this time, but BLM would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that the site would be developed with the same or a different solar technology. Different solar technologies require different amounts of grading; however, it is expected that all solar technologies would require some amount of grading and site maintenance. In the interim, existing uses of the land, including its inclusion within the Clark Mountain Grazing Allotment, would continue until such time that those uses might be modified as part of the decision to authorize a different solar project. *In addition, the area would remain available for other multiple uses.* Potential impacts that might occur in connection with a future solar energy project proposed in response to the land use plan contemplated by this alternative are speculative at this time, because they are associated with some future project. These impacts would need to be evaluated in a later environmental analysis associated with any projects that are proposed in the future.

2.6 Comparison of Impacts by Alternative

Table 2-8 presents a comparison of the differences in impacts among the alternatives described in Sections 2.3 through 2.5 above. The information in Table 2-8 is derived from the analysis of environmental consequences presented in Chapter 4 of this EIS/EIR.

Table 2-8. Comparison of Impacts by Alternative

Resource	Alternative 1 Proposed Action	Alternative 2 2,385 Ac Alternative	***Revised*** Alternative 3 ***1,685*** Ac Alternative	Alternative 4 Reduced Acreage Alternative	Alternative 5 No Action Alternative	Alternative 6 No Project, Exclude Solar	Alternative 7 No Project, Approve Solar
Air Resources	Adverse impacts from ground disturbance, dust generation, vehicle emissions *would be slightly lower than Alternative 2 due to smaller footprint, but still substantial*.	*Adverse impacts from ground disturbance, dust generation, vehicle emissions would be highest of any of the action alternatives due to largest acreage and bifurcated footprint.*	*Adverse impacts from ground disturbance, dust generation, vehicle emissions would be lowest of any of the action alternatives due to smallest acreage and use of mowing in site preparation.*	*Adverse impacts from ground disturbance, dust generation, vehicle emissions would be lower than Alternatives 1 and 2 due to smaller footprint, but still substantial due to site-wide grading and compaction.*	No emissions near project site.	No emissions near project site.	No emissions near project site. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Climate Change	Adverse impacts from vehicle use *slightly lower than Alternative 2 due to smaller footprint*. Beneficial impacts from eliminating need for natural gas generation *are the same for Alternatives 1, 2, and 3 due to same power output*.	*Adverse impacts from vehicle emissions would be highest of any of the action alternatives due to largest acreage and bifurcated footprint. Beneficial impacts from eliminating need for natural gas generation are the same for Alternatives 1, 2, and 3 due to same power output.*	*Adverse impacts from vehicle use slightly lower than Alternative 2 due to smaller footprint. Beneficial impacts from eliminating need for natural gas generation are the same for Alternatives 1, 2, and 3 due to same power output.*	*Adverse impacts from vehicle use slightly lower than Alternative 2 due to smaller footprint.* Beneficial impact *would be lowest of the action alternatives* due to lower power output.	No emissions from vehicles, but no beneficial impacts from displacement of natural gas generation.	No emissions from vehicles, but no beneficial impacts from displacement of natural gas generation.	No emissions from vehicles, but no beneficial impacts from displacement of natural gas generation at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Archaeological and Built Environment	Potential impacts to one eligible resource (Hoover to San Bernardino Transmission Line).	Potential impacts to two eligible resources (Hoover to San Bernardino Transmission Line and STL-25).	Potential impacts to two eligible resources (Hoover to San Bernardino Transmission Line and STL-25).	Potential impacts to two eligible resources (Hoover to San Bernardino Transmission Line and STL-25).	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-

Table 2-8. Comparison of Impacts by Alternative

Resource	Alternative 1 Proposed Action	Alternative 2 2,385 Ac Alternative	***Revised*** Alternative 3 ***1,685*** Ac Alternative	Alternative 4 Reduced Acreage Alternative	Alternative 5 No Action Alternative	Alternative 6 No Project, Exclude Solar	Alternative 7 No Project, Approve Solar
							specific analysis.
Environmental Justice	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Lands and Realty	Removal of 2,143 ac project area from other land uses. Impact on open routes to be addressed through re-routing around facility. Impact on Primm ROW would need to be resolved with Primm.	Removal of 2,385 ac project area from other land uses. Impact on open routes to be addressed through re-routing around facility. No impact on Primm ROW.	Removal of *1,685* ac project area from other land uses. Impact on open routes to be addressed through re-routing around facility. *Solar arrays would be configured to avoid conflict with Primm ROW.*	Removal of 1,766 ac project area from other land uses. Impact on open routes to be addressed through re-routing around facility. No impact on Primm ROW.	No impacts.	Reduction in types of land uses allowed on 2,143 ac project site. Continues current use of the land for grazing lease.	No impacts at this time. Continues current use of the land for grazing lease. Does not restrict future land uses on 2,143 ac project area. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Grazing	Reduction of *2,143 acres* and *33* animal unit months (AUMs) in existing grazing allotment.	*Reduction of 2,385 acres and 37 AUMs in existing grazing allotment.*	*Reduction of 1,685 acres and 27 AUMs in existing grazing allotment.*	*Reduction of 1,766 acres and 27 AUMs in existing grazing allotment.*	No impacts.	No impacts. Allotment would continue grazing at current level.	No impacts at this time. Allotment would continue grazing at current level. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Mineral	Removal of *2,143*	*Removal of 2,385*	*Removal of 1,685*	*Removal of 1,766*	No impacts.	No impacts.	No impacts at this

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Resource	Alternative 1 Proposed Action	Alternative 2 2,385 Ac Alternative	***Revised*** Alternative 3 ***1,685*** Ac Alternative	Alternative 4 Reduced Acreage Alternative	Alternative 5 No Action Alternative	Alternative 6 No Project, Exclude Solar	Alternative 7 No Project, Approve Solar
Resources	*acre* project area from potential mineral development.	*acre project area from potential mineral development.*	*acre project area from potential mineral development.*	*acre project area from potential mineral development.*			time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Noise	*Adverse impacts from heavy equipment and construction vehicles would be slightly lower than Alternative 2 due to smaller footprint.*	*Adverse impacts from heavy equipment and construction vehicles would be highest of any of the action alternatives due to largest acreage and bifurcated footprint.*	*Adverse impacts from heavy equipment and construction vehicles would be lowest of any of the action alternatives due to smallest acreage and use of mowing in site preparation.*	*Adverse impacts from heavy equipment and construction vehicles would be lower than Alternatives 1 and 2 due to smaller footprint, but still substantial due to site-wide grading and compaction.*	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Paleontological Resources	Potential impacts to unknown resources would be addressed through mitigation measures.	Potential impacts to unknown resources would be addressed through mitigation measures.	Potential impacts to unknown resources would be addressed through mitigation measures.	Potential impacts to unknown resources would be addressed through mitigation measures.	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Public Health and Safety	*Adverse impacts related to worker safety and potential releases of hazardous material would be slightly lower than Alternative 2 due to smaller footprint and shorter*	*Adverse impacts related to worker safety and potential releases of hazardous material during construction would be longer than Alternatives 1 and 4 due to longer*	*Adverse impacts related to worker safety and potential releases of hazardous material during construction would be highest of the action alternatives due to work*	*Adverse impacts related to worker safety and potential releases of hazardous material would be slightly lower than Alternatives 1 and 2 due to smaller footprint and*	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.

Table 2-8. Comparison of Impacts by Alternative

Resource	Alternative 1 Proposed Action	Alternative 2 2,385 Ac Alternative	***Revised*** Alternative 3 ***1,685*** Ac Alternative	Alternative 4 Reduced Acreage Alternative	Alternative 5 No Action Alternative	Alternative 6 No Project, Exclude Solar	Alternative 7 No Project, Approve Solar
	construction duration.	*duration of construction.*	*occurring on more uneven ground with mowed vegetation.*	*shorter construction duration.*			
Recreation	Modification of current open routes. Removal of 2,143 ac land area for recreation opportunities. Alt. 1 is furthest from land sailing on Ivanpah Dry Lake of the action alternatives.	Modification of current open routes, but different routes than Alt. 1. Removal of 2,385 ac land area for recreation opportunities. Directly adjacent to land sailing on Ivanpah Dry Lake.	Modification of current open routes, but different routes than Alt. 1. Removal of *1,685* ac land area for recreation opportunities. Directly adjacent to land sailing on Ivanpah Dry Lake.	Modification of current open routes, but different routes than Alt. 1. Removal of 1,776 ac land area for recreation opportunities. Directly adjacent to land sailing on Ivanpah Dry Lake.	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Social and Economic Issues	Beneficial employment and tax revenue impacts *would be slightly reduced from those in Alternative 2*. No housing or public services impacts.	*Beneficial employment and tax revenue impacts would be highest of the action alternatives due to longer construction duration.* No housing or public services impacts.	*Beneficial employment and tax revenue impacts would be lowest of the action alternatives due to shortest construction duration.* No housing or public services impacts.	*Beneficial employment and tax revenue impacts would be slightly higher than those in Alternative 3.* No housing or public services impacts.	No beneficial employment and tax revenue impacts.	No beneficial employment and tax revenue impacts.	No beneficial employment and tax revenue impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Soil Resources	Adverse impact from ground disturbance over 2,143 ac. Probably permanent, despite plans for restoration.	Adverse impact from ground disturbance over 2,385 ac. Probably permanent, despite plans for restoration.	Adverse impact from ground disturbance over *1,685* ac. Probably permanent, despite plans for restoration.	Adverse impact from ground disturbance over 1,766 ac. Probably permanent, despite plans for restoration.	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Special	No impacts from solar plant other	No impacts from solar plant other	No impacts from solar plant other	No impacts from solar plant other	No impacts.	*Beneficial impact on special*	No impacts at this time. Impacts

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Designations	than being visible from within some SMAs. Beneficial impact on special management areas (SMAs) by adjusting boundaries of Ivanpah DWMA to improve BLM's management capability.	than being visible from within some SMAs. Beneficial impact on SMAs by adjusting boundaries of Ivanpah DWMA to improve BLM's management capability.	than being visible from within some SMAs. Beneficial impact on SMAs by adjusting boundaries of Ivanpah DWMA to improve BLM's management capability.	than being visible from within some SMAs. Beneficial impact on SMAs by adjusting boundaries of Ivanpah DWMA to improve BLM's management capability.		*management areas (SMAs) by adjusting boundaries of Ivanpah DWMA to improve BLM's management capability.*	associated with a future project are speculative and would be considered in future project-specific analysis.
Transportation and Public Access	Increased traffic due to delivery of materials and commuting *would be slightly reduced compared to Alternative 2.*	*Increased traffic due to delivery of materials and commuting would be highest of the action alternatives due to longest construction duration and bifurcated site.*	*Increased traffic due to delivery of materials and commuting would be lowest of the action alternatives due to shortest construction duration.*	*Increased traffic due to delivery of materials and commuting would be slightly higher than Alternative 3.*	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Vegetation Resources	Adverse impact by removal of 2,023 ac of Mojave creosote bush scrub, 82 occurrences of special-status species, and 146 ac of CDFW jurisdictional drainages.	Adverse impact by removal of 2,327 ac of Mojave creosote bush scrub and 35 ac of Desert saltbush scrub, 59 occurrences of special-status species, and 178 ac of CDFW jurisdictional drainages.	Adverse impact by removal of *1,657* ac of Mojave creosote bush scrub and 28 ac of Desert saltbush scrub, 90 occurrences of special-status species, and *128* ac of CDFW jurisdictional drainages.	Adverse impact by removal of 1,690 ac of Mojave creosote bush scrub and 35 ac of Desert saltbush scrub, 53 occurrences of special-status species, and 130 ac of CDFW jurisdictional drainages.	No impacts.	No impacts.	No impacts from solar facility at this time. Future solar facility Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Visual Resources	Adverse impact by placing industrial-appearing facility	*Adverse impact by placing industrial-appearing facility*	*Adverse impact by placing industrial-appearing facility*	*Adverse impact by placing industrial-appearing facility*	No impacts.	No impacts.	No impacts at this time. Impacts associated with a

Table 2-8. Comparison of Impacts by Alternative

Resource	Alternative 1 Proposed Action	Alternative 2 2,385 Ac Alternative	***Revised*** Alternative 3 ***1,685*** Ac Alternative	Alternative 4 Reduced Acreage Alternative	Alternative 5 No Action Alternative	Alternative 6 No Project, Exclude Solar	Alternative 7 No Project, Approve Solar
	and night lighting on currently undeveloped land *would be the lowest among the action alternatives due to furthest distance from I-15.*	*and night lighting on currently undeveloped land.* Magnitude *of the impact would be the highest of the action alternatives* due to placement of facility closer to viewers on I-15 and Primm Valley Golf Course.	*and night lighting on currently undeveloped land. Magnitude of the impact would be the lowest of the action alternatives due to smallest footprint and greatest distance from the Primm Valley Golf Course.*	*and night lighting on currently undeveloped land. Magnitude of the impact would slightly higher than that of Alternative 3, due to slightly larger project acreage.*			future project are speculative and would be considered in future project-specific analysis.
Water Resources	*Groundwater use would be the same for Alternatives 1, 2, and 3. Surface water hydrology impact due to grading and removal of vegetation would be the same as Alternatives 2 and 4.*	*Groundwater use would be the same for Alternatives 1, 2, and 3. Surface water hydrology impact due to grading and removal of vegetation would be the same as Alternatives 1 and 4.*	*Groundwater use would be the same for Alternatives 1, 2, and 3. Surface water hydrology impact would be the least among the action alternatives due to minimizing the amount of site grading and maintaining vegetation on large portions of the site.*	*Groundwater use would be lowest of the action alternatives due to using only a portion of the bifurcated site. Surface water hydrology impact due to grading and removal of vegetation would be the same as Alternatives 2 and 4.*	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Wild Horse and Burro	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.

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Resource	Alternative 1 Proposed Action	Alternative 2 2,385 Ac Alternative	***Revised*** Alternative 3 ***1,685*** Ac Alternative	Alternative 4 Reduced Acreage Alternative	Alternative 5 No Action Alternative	Alternative 6 No Project, Exclude Solar	Alternative 7 No Project, Approve Solar
Wildland Fire	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.	No impacts at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.
Wildlife Resources	Adverse impact by displacement of a T&E species (desert tortoise) and other wildlife (birds, insects, reptiles, mammals) from 2,143 ac area. Impacts to individuals and habitat. Potential impacts in larger area where tortoises would be translocated. Potential adverse impact by reducing connectivity for tortoise and other species. Beneficial impact from expansion of DWMA.	Adverse impact by displacement of a T&E species (desert tortoise) and other wildlife (birds, insects, reptiles, mammals) from 2,385 ac area. Impacts to individuals and habitat. Potential impacts in larger area where tortoises would be translocated. Potential adverse impact by reducing connectivity for tortoise and other species. Beneficial impact from expansion of DWMA.	Adverse impact by displacement of a T&E species (desert tortoise) and other wildlife (birds, insects, reptiles, mammals) from *1,685* ac area. Impacts to individuals and habitat. Potential impacts in larger area where tortoises would be translocated. Potential reduction of north-south connectivity is improved by including buffer between facility and Metamorphic Hill*, and between facility and Stateline Hills*. Beneficial impact from expansion of DWMA.	Adverse impact by displacement of a T&E species (desert tortoise) and other wildlife (birds, insects, reptiles, mammals) from 1,766 ac area. Impacts to individuals and habitat. Potential impacts in larger area where tortoises would be translocated. Potential adverse impact by reducing connectivity for tortoise and other species. Beneficial impact from expansion of DWMA.	No impacts.	*Beneficial impact from expansion of DWMA.*	No impacts from solar facility at this time. Impacts associated with a future project are speculative and would be considered in future project-specific analysis.

2.7 Federal Lead Agency Preferred Alternative and CEQA Environmentally Superior Alternative

The "preferred alternative" is a preliminary indication of the federal responsible official's preference of action, which is chosen from among the Proposed Action and alternatives. The preferred alternative may be selected for a variety of reasons (such as the priorities of a particular lead agency) in addition to the environmental considerations discussed in the EIS/EIR. The BLM's Preferred Alternative is ***Revised*** Alternative 3.

In accordance with CEQA requirements, an "environmentally superior alternative" must be identified among the alternatives analyzed in an EIR or EIS/EIR. The environmentally superior alternative is the alternative found to have an overall environmental advantage compared to other alternatives based on the impact analysis in the EIR. If the environmentally superior alternative is the No Project alternative, State CEQA Guidelines Section 15126.6(e)(2) requires the EIR to identify an environmentally superior alternative from among the other alternatives. For this Proposed Action, the No Project alternative would be superior to any of the action alternatives because the impacts of implementing the Proposed Action would be avoided for the time being. Among the other alternatives, San Bernardino County has identified ***Revised*** Alternative 3 as the environmentally superior alternative because, of the action alternatives, it would have the smallest impact on wildlife habitat and connectivity.

2.8 Alternatives Considered but Eliminated from Detailed Analysis

The ability of potential alternatives to achieve the project's purpose and need and stated objectives is one of the criteria used to evaluate alternatives. The NEPA (40 CFR 1502.13) and CEQA (State CEQA Guidelines 15124[b]) both explain that an agency's statement of objectives or purpose and need should describe the underlying purpose of the Proposed Action and reasons why an agency is responding. Similar to CEQA, NEPA allows for consideration of alternatives that meet "most" of the project purpose.

In compliance with the "NEPA Compliance for Utility-Scale Renewable Energy ROW Authorizations" (IM 2011-059; BLM 2011), alternatives not carried forward did not meet the BLM's or the County's purpose and need, were determined to be technically or economically infeasible because they could not meet the Project objectives, and/or had greater environmental impacts than the currently Proposed Action or alternatives.

2.8.1 Alternative Sites

The Applicant considered multiple alternative locations for the project, including sites on private land and on other BLM-administered lands, as described in the subsections below. In addition, BLM and the County considered alternative locations based on knowledge of the project area, and based on comments received from the public during the scoping period. Consideration of alternative locations for large-scale solar facilities is restricted by several factors, including:

- Large land area requirements for the facilities;
- Technical requirements, including solarity, slope, and hydrology;
- Resource protection requirements, including meeting management restrictions and objectives of the land owner/manager, as well as requirements of resource protection agencies; and
- Economic factors, especially as related to site accessibility, proximity to load centers, and proximity to transmission infrastructure.

First Solar's selection of the proposed location for the Project was made in consideration of these factors. Specifically, their site selection process was based on the following criteria:

- High level or solar insolation, based on climate, topography, and elevation;
- Availability of a contiguous area of land large enough to generate at least 350 MW of solar PV power;
- Avoidance of areas designated for protection of resources or with known sensitive resources, including ACECs, DWMAs, wilderness areas, National Parks or Preserves, known cultural resources sites, and Category I desert tortoise habitat;
- Proximity to existing high voltage transmission facilities, including suitable interconnection and priority queue position;
- Proximity to highway access; and
- Location in an area which has a previous history of development and disturbance.

To meet their objective of creating a renewable source of electricity to help fulfill national and state renewable energy goals and GHG emissions reduction requirements, the Applicant's site selection process began with a review of the Transmission Ranking Cost Report filed by SCE with the California Public Utilities Commission (CPUC) to identify feasible interconnection locations. In this review, the existing Mountain Pass Substation was identified as a feasible location for interconnection for a renewable energy source. This resulted in a focus on the Mountain Pass, Ivanpah Valley, and Shadow Valley areas as potential locations for a solar energy facility. In 2009, SCE filed a certificate of public convenience and necessity for the Eldorado-Ivanpah Transmission Project (EITP), which would provide an interconnection point even closer to areas within Ivanpah Valley that have suitable solarity and topographic characteristics relative to Mountain Pass or Shadow Valley. For these and other reasons as explained in the subsections below, none of the alternative site locations were carried forward for further analysis.

2.8.1.1 Private Land Alternative

Private lands were considered by the Applicant for siting the proposed solar energy facility. The BLM does not typically analyze a non-federal application on public lands because such an alternative does not respond to the BLM's purpose and need to consider an application for the authorized use of public lands for renewable energy development. However, the use of private lands was identified as an alternative to be considered during scoping. The BLM, to inform the analysis, has considered private land alternatives as described in the following paragraphs. However, based on this information, the alternative was not carried into Section 4 for detailed analysis.

As discussed above, the Applicant's siting process identified the Mountain Pass, Ivanpah Valley, and Shadow Valley areas as locations where the characteristics of the transmission system make interconnection to add renewable energy sources feasible. However, the land ownership in these areas does not include any large parcels of private property, or multiple private parcels in close proximity to one another. Therefore, it is not feasible to site a renewable energy project or access this interconnection location from a facility located exclusively on private lands, and therefore such an alternative would be technically and economically infeasible.

In general, this same situation applies throughout the California desert region. There are limited areas where contiguous private land parcels exist that have the appropriate slope and solarity characteristic, as well as feasible interconnection access. Locations where private land is available also often include parcels that are designated as prime farmland, Williamson Act

contracted lands, and Unique Farmland of Statewide Importance, further limiting the feasibility of acquiring site control for renewable energy development. In areas where such parcels do exist, the feasibility and timing of acquiring the necessary site control agreements with multiple owners to acquire a contiguous site is sufficient reason for the BLM to reject a private land alternative as being economically infeasible (*Western Watersheds v. Salazar*, No. 11-cv-00492-DMG-E (C.D. Cal. Aug. 10. 2011, at p. 31).

As result, the various potential private land sites considered during project scoping were eliminated from further review because they do not meet the BLM's or the County's purpose and need for the Project, the Project objectives, and project, and are not reasonable alternatives as described above.

2.8.1.2 Alternative BLM-Administered Land

The potential for siting solar facilities on other BLM land in the area was proposed during scoping, and was also raised during BLM's evaluation of the nearby Ivanpah SEGS project. Much of the BLM-administered land in the Mountain Pass, Ivanpah Valley, and Shadow Valley areas with the highest solar energy production potential is precluded from development by special designations for resource protection such as ACECs, DWMAs, and wilderness, and thus utility-scale solar energy development is inconsistent with basic policy objectives for management of the area. Within the Mountain Pass, Ivanpah Valley, and Shadow Valley areas, solar development on public lands is constrained by the Ivanpah DWMA and Critical Habitat for the desert tortoise (east of I-15 in Ivanpah Valley) and by the Shadow Valley DWMA.

Development on Ivanpah Dry Lake itself is precluded due to technical characteristics as this project site would be subject to seasonal flooding. The dry lake bed floods sometimes more than once per year, and when it does, vehicles cannot drive on the dry lake bed surface. When it floods, the dry lake bed usually remains flooded for a period of weeks or months. As a result, any alternative that resulted in development of a solar facility on the dry lake surface would require the placement of a very large amount of fill on the playa so that the facility would not be flooded during every storm event. Placing enough fill material across the footprint of the 2,143 acre site would require such a large amount of excavation at another site, as well as transport by truck, to make the alternative financially infeasible. In addition to being infeasible, these activities would create impacts at the source location, and due to increased truck traffic. As a consequence of placing the required amount of fill on the playa surface, the fill would displace storm water storage capacity of the dry lake surface by an enormous volume. This would force storm waters to invade the low lying areas surrounding the playa and flood the margins of the lake. Depending upon the topography, these lake margins would become playa over time. It would be likely that substantial areas surrounding the current playa would eventually be lost to new playa surface. Placement of the facility on the dry lake bed would also eliminate the use of the dry lake bed for its current recreational uses. The dry lake is specifically designated within the CDCA Plan for nonmotorized open-space recreational activities. In sum, development on the Dry Lake would be technically and economically infeasible and would result in greater environmental impacts than the Proposed Action or alternatives.

Development of public lands outside of the Mountain Pass, Ivanpah Valley, and Shadow Valley areas is not a feasible alternative to the Proposed Action because it would not utilize the existing interconnection capacity available in the Ivanpah Valley for such a renewable project. Additionally, public lands located outside of Mountain Pass, Ivanpah Valley, and Shadow Valley that have appropriate technical characteristics and would avoid resource impacts generally speaking are already under application for other solar development necessary to meet the California and federal renewable energy goals. *Finally, a project in those areas would not respond to the BLM's purpose and need which is to consider a request for a solar energy generating facility in the Ivanpah Valley.*

As a result of the factors discussed above, development of the project on other lands administered by BLM would not be feasible, is inconsistent with the basic policy objectives for management of the area, and would not achieve the purpose and need of the project for either CEQA or NEPA purposes.

2.8.1.3 Brownfield Sites

The EPA tracks 480,000 contaminated sites for potential reuse for renewable energy development as part of its RE-Powering America's Lands Initiative. Of these sites, EPA has identified 5,000 sites nationwide as potentially suitable for PV. Using the EPA's Renewable Energy Interactive Mapping Tool, which is a Google Earth KMZ file, it is possible to view information about potential utility scale PV solar energy sites on contaminated lands. In addition to the contaminated site's location, the tool also provides the site name and identification information, a link to the site's cleanup status information, and specific acreage and renewable energy resource information. BLM used the tool to select EPA tracked sites (i.e., abandoned mined lands, brownfields, RCRA sites, federal and non-federal Superfund sites, and landfills) as well as state-tracked sites, in the vicinity of the Stateline project site. No sites were found in the vicinity. The closest sites are in Las Vegas, Nevada, 40 miles away. The largest of these is the Sunrise Landfill, which covers an area of 720 acres. This site is not large enough to accomplish the objective of generating 300 MW. The next nearest site is in Baker, California, more than 50 miles away, and covers only 10 acres. In general, no sites which are of a size needed to meet the space requirements for the project were identified.

2.8.2 Alternative Site Configurations

Both the Applicant and the agencies have developed and considered alternative configurations for the Proposed Action within the Project Study Area, including alternatives that avoid significant current surface water drainages, avoid biological resources, avoid cultural resources, and minimize the amount of acreage to be granted in the ROW. As discussed in Section 1.0, the approach taken by the Applicant was to establish a Study Area that was substantially larger in size than the land area necessary for the project. The Study Area was then subjected to biological, cultural, and other resource surveys and studies to identify potential project configurations that would minimize impacts to identified resources. As part of the process, the Study Area itself, which originally comprised 5,518 acres, was modified and shifted slightly to the south and east. Overall, the original Project Study Area and the current Project Study Area together comprise 6,400 acres.

Within that Study Area, numerous project sizes and configurations have been considered by the Applicant. These configurations have included projects of the following size: 4,160 acres (2006); 6,400 acres (2008); 3,011 acres (2009); 3,000 acre proposed project with 2,114 and 2,013 acre alternatives (2010); 2,150 acre proposed project with 1,900 acre alternative (August, 2011); and 2,150 acre proposed project with 2,415 acre alternative (late 2011).

Of those configurations, the 2,150 acre configuration from late 2011 is the basis for Alternative 1, which is analyzed in Chapter 4 of this EIS/EIR as the Proposed Action. Similarly, the 2,145 area alternative is the basis for the project analyzed as Alternative 2 in Chapter 4. In general, the process used by the Applicant and the agencies has been to reduce the size of the project in order to avoid resources identified within the Project Study Area.

Following review of the various resource surveys and proposed configurations, BLM developed an additional alternative configuration to *reduce* biological resource impacts. This configuration, comprising *1,685* acres, is analyzed as *Revised* Alternative 3 in the EIS/EIR. In addition, BLM is considering a reduced acreage, reduced output alternative as Alternative 4. Both of these alternative configurations are analyzed in detail in Chapter 4 of this EIS/EIR. *As a result, BLM*

has determined that there are no alternative Project configurations within the existing study area that would result in fewer impacts than those already analyzed in light of the other projects constraints. As result, there were no other alternative configurations carried forward for analysis.

2.8.3 *Alternative Construction Methods*

Several public comments on the Draft EIS/EIR requested that the agency consider an alternative that would retain onsite ephemeral drainages and implement the project without grading and vegetation removal. In response to these comments, the agency did the following:

- *Worked with the Applicant to modify their proposed action to reduce the use of grading, disk and roll, and vegetation removal as much as feasible;*
- *Considered evaluating a separate alternative that would prohibit the use of grading and disk and roll as part of the construction process.*

In response to these issues, the Applicant developed a Revised Site Preparation Plan which considered areas where grading and disk and roll could be minimized, and proposed a zoned approach to site preparation. This approach has been incorporated into Alternative 3, which was the BLM's Preferred Alternative and identified by the County as the Environmentally Superior Alternative in the Draft EIS/EIR. The result is Revised Alternative 3, which is described in Section 2.3.3, and evaluated in detail in Chapter 4.

In addition to revising their site preparation plan, the Applicant provided technical justification explaining why some level of site grading and vegetation removal was necessary for construction of the project to be feasible, due to the unevenness of the terrain. The two issues which require leveling of the surface include safety, and constructability.

With respect to safety, removal of vegetation and leveling of the ground surface is necessary because materials, including the panels and the modular supports, are moved about the site and stored in stacks. The materials are brought in by truck, but then must be moved to their installation location by forklifts, and set on the ground on pallets and on folding tables. Moving stacks of materials by forklift, or storing them on pallets in stacks, on uneven ground presents a very high risk of toppling of the stacks. This process would not only damage the materials, but would be a substantial safety hazard for workers in the vicinity. In addition, the panel installation process occurs by workers on foot. This includes workers on foot moving as spotters for the forklifts and cranes (often moving backwards), and also workers on foot attaching panels to the modular supports with clamps. Performing these tasks on uneven ground, and with vegetation present, would present a substantial tripping hazard.

In addition to safety issues, the installation of PV panels requires very limited vertical and horizontal tolerances. Each row of panels is attached to a series of 28 support posts, and the support posts must be perfectly straight, and aligned to within 0.5 inches vertical height. Installing the posts within this tolerance using post drivers sitting on uneven surfaces is not feasible.

The Draft EIS/EIR analyzed the impacts associated with stormwater drainage modification, air emissions, and groundwater use based on the Applicant's original plan to grade or disk and roll the entire project site. That analysis concluded that the Applicant's proposed stormwater management system of detention basins would effectively ensure that no erosion or surface water modification impacts would occur. Although the agency agrees that vegetation impacts would be reduced by mowing as opposed to grading, leaving original topography and vegetation onsite would increase construction safety hazards and render panel installation infeasible. Therefore, an alternative which would maintain all on-site drainages and vegetation was eliminated as being infeasible.

In this analysis, BLM determined that the feasibility constraint was limited only to construction of the site, and not to operations. Once the panels have been installed, they can operate effectively with an uneven ground surface and vegetation beneath them, as long as corridors remain between sections of panels for maintenance access and as long as the height of the vegetation is managed so that it does not shade the panels. The Applicant has acknowledged this by proposing to install panels over mowed areas covering 40 percent of the site. Therefore, although it would not fully compensate for construction-related vegetation impacts, the Applicant would be required, under mitigation measure MM-Veg-8, to decompact, revegetate, and monitor the solar array areas immediately following construction. Implementation of this measure would assist in reducing the potential for soil erosion by wind or stormwater, provide some level of habitat for wildlife, and provide a head start for re-vegetation that would be required during decommissioning. Details of the mitigation measure are provided in Section 4.17.11.

2.8.4 Other Types of Energy Projects, Conservation and Demand-Side Management, and Distributed Generation

The BLM will not typically analyze an alternative for different technology when a ROW application is submitted for a specific technology because such an alternative does not respond to the BLM's purpose and need to consider an application for the authorized use of public lands for a specific renewable energy technology. For renewable energy projects, there are many different types of alternatives that are considered by the BLM and the Applicant during pre-application activities and that are suggested to the BLM by external parties through scoping and comments on the NEPA document. These alternatives include wind, geothermal, biomass, tidal, and wave energy. Traditional sources of energy could also be considered, which include coal, natural gas, and nuclear energy.

These technologies were eliminated from detailed consideration because they would not respond to the BLM's purpose and need, which is to respond to the Applicant's ROW grant application to construct, operate, and decommission a solar PV facility on public lands. Additionally, non-renewable energy technologies do not respond to the purpose and need to meet the goal *set by the President's Climate Action Plan, which will require approval of 20,000 MW of renewable energy projects on public lands by 2020*. In addition, none of these technologies would meet the Applicant's objectives because they would not use the Applicant's technology. *And while, Applicant's objectives are not controlling, they are taken into consideration by the BLM.* Finally, no alternative technologies were identified that would address the unresolved resource conflicts raised by the Proposed Action. Therefore, alternative technologies are not a reasonable alternative to the Applicant's proposed technology.

Conservation and demand-side management could be implemented rather than creating a new source of energy. Conservation and demand-side management consist of a variety of approaches to reduce electricity use, including energy efficiency and conservation, building and appliance standards, and load management and fuel substitution. However, conservation alone is not sufficient to address all of California's energy needs, and would not provide the renewable energy required to meet the California RPS requirements. Additionally, it does not respond to the BLM's purpose and need or the *management directives* established by the *President's Climate Action Plan.*

Another option would be distributed solar generation. A distributed solar alternative would consist of PV panels that would absorb solar radiation and convert it directly to electricity. The PV panels could be installed on building rooftops or in other disturbed areas such as parking lots or adjacent to existing substations. However, distributed generation does not respond to the purpose and need to consider an application for a ROW grant to construct, operate, and decommission a solar PV facility on public lands. Additionally, *the President's Climate Action Plan establishes a goal for the Department of the Interior to permit 20,000* MW of electricity from

non-hydropower renewable energy projects located on public lands by *2020*. Given the current state of the technology, only utility-scale renewable energy generation projects are reasonable alternatives to achieve this level of renewable energy generation on public lands. Furthermore, the BLM has no authority or influence over the installation of distributed generation systems, other than on its own lands. The BLM is evaluating the use of distributed generation at individual sites through other initiatives (Executive Order 13514 and Department of the Interior implementing actions).

An analysis of the specific types of alternative energy projects identified above is discussed in Table 2-9 below. Generally, these alternatives were not carried for NEPA analysis by the BLM because they do not respond to the Agency's purpose and need for the Proposed Action to respond to an application for a PV solar energy generation facility on public lands, and they would also not help meet the BLM or State renewable energy development goals. Table 2-9 below provides additional explanation for why specific alternative technologies were not carried forward for further analysis, including an explanation of why they were eliminated.

Table 2-9. Other Types of Energy Projects Eliminated from Detailed Analysis

Alternative	Purpose/Objective Criteria	Feasibility Criteria	Environmental Criteria
Wind Power Project	***Only partially meets objective and purpose (renewable energy) criteria.*** Does not meet the objective of *developing a* PV solar energy *generating facility*.	***Does not meet feasibility criteria.*** The Applicant, a solar PV panel manufacturer, did not develop this alternative. Wind resources are plentiful in Southern California and BLM is permitting California wind farm projects. Specific feasibility of the site for wind development has not been evaluated.	***Meets environmental criteria.*** Wind energy generally requires less land disturbance for a comparable power output thereby reducing the potential effects to cultural and biological resources. However, wind energy has other impacts, including visual impacts and impacts to birds and bats.
Geothermal Power Project	***Meets purpose criteria (renewable energy) but only partially meets objective criteria.*** Does not meet the objective of *developing a PV solar energy generating facility*. Would not likely meet generation objective, as multiple projects would be required to achieve 300 MW of geothermal energy.	***Does not meet feasibility criteria.*** The Applicant, a solar PV panel manufacturer, did not develop this alternative. Geothermal plants must be built near geothermal reservoir sites. Project site is not a geologically suitable area or source of geothermal energy.	***Meets environmental criteria.*** If a geothermal power project were feasible it would reduce effects on air quality, and cultural and biological resources as geothermal power projects use less land; however, they can cause visual impacts and produce waste and byproducts such as hydrogen sulfide that can have impacts.
Biomass Project	***Meets purpose criteria (renewable energy) but only partially meets objective criteria.*** Does not meet the objective of *developing a PV solar energy generating facility*. Would not meet generation objective of 300 MW, as most biomass plant capacities are in the 3- to 10-MW range.	***Does not meet feasibility criteria.*** The Applicant, a solar PV panel manufacturer, did not develop this alternative. Major biomass fuels include forestry and mill wastes, agricultural field crops and food processing wastes, construction and urban wood waste. These sources would need to be hauled great distances substantially increasing operational costs and viability of a biomass project in this location.	***May not meet environmental criteria.*** This alternative would require less land for each facility thereby reducing effects to cultural and biological resources; however, multiple facilities would be needed to meet the generation objective which would increase impacts. Air quality, traffic, and noise impacts would increase as a result of the long distances required to haul biomass fuel sources. Operational emissions from the facility would increase air quality impacts, health risks (from toxic air contaminants), and could adversely affect visibility.
Tidal Energy Project	***Meets purpose criteria (renewable energy) but only partially meets objective criteria.*** *Tidal energy* projects do not meet BLM's renewable energy targets.	***Does not meet feasibility criteria.*** Project area is not located in proximity to a bay or estuary with large differences in elevation between high and low tides where a dam (a.k.a. barrage) could be built, or located near the ocean, such that tidal energy generation is not feasible.	***May not meet environmental criteria.*** If a tidal energy project were feasible, aesthetic, biological resource, vessel traffic, and recreation impacts may increase.
Wave Energy Project	***Meets purpose criteria (renewable energy) but only partially meets objective criteria.*** *Wave energy* projects do not meet BLM's renewable energy targets.	***Does not meet feasibility criteria.*** Project area is not located in proximity to a large body of water with constantly strong waves. In addition, wave energy is new and may not be technically feasible.	***May not meet environmental criteria.*** If a wave energy project were feasible, aesthetic, biological resource, vessel traffic, and recreation impacts may increase. There would also be potential impacts on the size and amount of waves with possible effects to beaches (e.g., changes to sediment transport processes).
Natural Gas	***Does not meet the purpose criteria or the***	***Does not meet feasibility criteria.*** Generation	***Would not meet environmental criteria.***

Table 2-9. Other Types of Energy Projects Eliminated from Detailed Analysis

Alternative	Purpose/Objective Criteria	Feasibility Criteria	Environmental Criteria
Project	***objective criteria.*** Does not meet Federal or State renewable energy development goals.	of electricity from combustion of natural gas is a common and proven technology. The Nevada Power Company's Walter M. Higgins Generating Station, a 530 MW natural gas peaking plant, is located about 2.5 miles northeast of the project site across the state line near Primm, Nevada. However, this does not meet the Applicant's objective to implement their technology.	Air quality impacts would increase as a result of operational emissions from the power plant. Impacts would occur off site from construction of natural gas and water supply lines resulting in potentially greater air quality, biological, cultural, groundwater, hazardous materials, land use, utilities, and visual resources impacts.
Coal Project	***Does not meet the purpose criteria or the objective criteria.*** Does not meet Federal or State renewable energy development goals.	***Does not meet feasibility criteria.*** Generation of electricity from combustion of coal is a proven technology, but is not common to the project region. There is no readily available source of coal in the project region. Furthermore, large quantities of water are generally required to produce steam and for cooling, which is not available at the project site or nearby.	***Would not meet environmental criteria***. Impacts associated with air quality, greenhouse gas, and health risks would increase substantially. Impacts would also occur from transportation of coal to the power plant. Impacts would occur off site from construction of a water supply line resulting in potentially greater air quality, biological, cultural, groundwater, land use, utilities, and visual resources impacts.
Nuclear Energy project	***Does not meet the purpose criteria or the objective criteria.*** Does not meet Federal or State renewable energy development goals.	***Does not meet feasibility criteria.*** Generation of electrical from nuclear reaction is a proven technology; however, California law prohibits construction of new nuclear power plants until an approved technology exists for the permanent disposal of spent fuel from these facilities. As such, this alternative is not feasible.	***Would not meet environmental criteria.*** Greater impacts would result from a nuclear power plant, including the impacts from the need for obtaining large quantities of water at the project site.
Conservation and Demand-Side Management	***Does not meet the purpose criteria or the objective criteria.*** Does not provide renewable energy required to meet the California Renewables Portfolio Standard requirement.	***Does not meet feasibility criteria.*** Not considered feasible due to the magnitude of projected generation capacity needed to meet project objectives and California Renewable Portfolio Standard requirements. Also out of scope of the BLM and County to authorize.	***Meets environmental criteria.*** Would reduce effects on all environmental resources.
Distributed Solar Generation	***Meets purpose criteria (renewable energy) but only partially meets objective criteria.*** Meets the project purpose (renewable energy generation). Would not likely meet generation objective or be implemented in a timeframe to meet the Renewables Portfolio Standard requirements. Distributed generation systems typically generate less than 10,000 kW.	***Does not meet feasibility criteria.*** Implementation would likely be economically infeasible for the Applicant to implement. Additionally, barriers exist for distributed solar generation related to interconnection with the electrical distribution grid. The present electric grid, built decades ago, was based on a centralized generation approach and was not designed to handle high levels of distributed renewable energy systems. Also out of scope of the BLM and County to authorize.	***Meets environmental criteria.*** Would reduce on-site impacts and would generally be located in previously disturbed areas.

3.0 Affected Environment

3.1 Introduction

Chapter 3 describes the environmental resources in the project area that could be affected by implementation of the proposed Desert Stateline Solar Farm facility (Proposed Action or Project). Chapter 3 describes resources, resource uses, special designations, and other important topics (i.e., public health and safety, social and economic considerations, and environmental justice conditions) that may be impacted by the Proposed Action and alternatives. “Resources” include air, climate change, soil, water, vegetative communities, wild horses and burros, wildlife and plant species, wildland fire ecology and management, as well as cultural, paleontological, and visual resources. “Resource uses” include livestock grazing, minerals, recreation management, transportation and public access, and lands and realty. “Special designations” include areas of critical environmental concern (ACECs), wilderness areas (WAs), and areas with wilderness characteristics.

Information and data used to prepare this chapter were obtained from the California Desert Conservation Area (CDCA) Plan, and various Bureau of Land Management (BLM) planning and National Environmental Policy Act (NEPA) documents. Information and data were also collected from many other related planning documents and research publications prepared by various federal and state agencies, County planning documents, and from private sources pertaining to key resource conditions and resource uses found within the project area. The purpose of this chapter is to provide a description of affected resources and BLM program areas within the existing environment of the project area, which will be used as a baseline to evaluate and assess the impact of the Proposed Action and alternatives described in Chapter 2 under both NEPA and California Environmental Quality Act (CEQA). Descriptions and analyses of the impacts under NEPA and CEQA are presented in Chapter 4, Environmental Consequences.

3.2 Air Resources

This section provides an evaluation of the air quality issues associated with the Desert Stateline Solar Farm Project. It describes the existing air quality and climate conditions within the air basin that would be affected by the construction and operation of the proposed facility. This section also outlines applicable regulations, plans, and standards for ambient air quality and greenhouse gas (GHG) emissions. Descriptions of the locations of facilities can be found in Chapter 2. Chapter 2 also includes a description of construction, operation, and maintenance techniques for the proposed facility as well as a detailed discussion of alternatives.

3.2.1 Environmental Setting

3.2.1.1 Meteorological Conditions

The project site is located in the southern California Mojave Desert, about 1.5 miles southwest of the California-Nevada border at an elevation of approximately 2,800 to 3,400 feet above sea level.

Prevailing winds in the project area are out of the west and southwest. These prevailing winds are due to the proximity of the Mojave Desert to coastal and central regions and the blocking nature of the Sierra Nevada Mountains to the north; air masses pushed onshore in southern California by differential heating are channeled through the Mojave Desert. The Mojave Desert is separated from the southern California coastal and central California valley regions by mountains (highest elevation approximately 10,000 feet), the passes of which form the main channels for these air masses (Mojave Desert Air Quality Management District CEQA Guidelines 2011).

During the summer the project area is generally influenced by a Pacific Subtropical High cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. The project area is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time the reach the desert. Most desert moisture arrives from infrequent warm, moist and unstable air masses from the south. The Mojave Desert averages between three and seven inches of precipitation per year (from 16 to 30 days with at least 0.01 inches of precipitation). The Mojave Desert is classified as a dry-hot desert climate, with portions classified as dry-very hot desert, to indicate that at least three months have maximum average temperatures over 100.4 degrees Fahrenheit (°F; Mojave Desert Air Quality Management District CEQA Guidelines 2011).

3.2.1.2 Existing Air Quality

The U. S. Environmental Protection Agency (EPA), California Air Resources Board (CARB), and the local air districts classify an area as attainment, unclassified, or nonattainment depending on whether or not the monitored ambient air quality data shows compliance, insufficient data available, or non-compliance with the ambient air quality standards, respectively. The National and California Ambient Air Quality Standards (NAAQS and CAAQS) relevant to the proposed facility area are provided in Table 3.2-1.

Table 3.2-1. Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]	Federal Standards (NAAQS)[2]	
			Primary	Secondary
Ozone (O_3)	1-hour	0.09 ppm (180 µg/m^3)	--	--
	8-hour	0.07 ppm (137 µg/m^3)	0.075 ppm[4] (147 µg/m^3)	Same as primary
PM_{10}	24-hour	50 µg/m^3	150 µg/m^3 [5]	Same as primary
	Annual	20 µg/m^3	--	--
$PM_{2.5}$	24-hour [3]	--	35 µg/m^3 [6]	Same as primary
	Annual	12 µg/m^3	15 µg/m^3 [7]	Same as primary
Carbon Monoxide (CO)	8-hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	--
	1-hour	20 ppm (23 µg/m^3)	35 ppm (40 mg/m^3)	--
Nitrogen Dioxide (NO_2)	Annual	0.030 ppm (57 µg/m^3)	0.053 ppm[9] (100 µg/m^3)	Same as primary
	1-hour	0.18 ppm (339 µg/m^3)	0.10 ppm[10] (189 µg/m^3)	Same as primary
Sulfur Dioxide (SO_2)	24-hour	0.04 ppm (105 µg/m^3)	--	--
	3-hour	--	--	0.50 ppm (1300 µg/m^3)
	1-hour	0.25 ppm (655 µg/m^3)	0.075 ppm[11] (196 µg/m^3)	--
Lead	30-Day	1.5 µg/m^3	--	--
	Quarterly	---	1.5 µg/m^3	Same as primary
	3-Month	---	0.15 µg/m^3 [13]	Same as primary
Sulfates	24-hour	25 µg/m^3	--	--
Hydrogen Sulfide (H_2S)	1-hour	0.03 ppm (42 µg/m^3)	--	--
Visibility Reducing Particles (VRP)	8-hour	See Note 13	--	--
Vinyl Chloride	24-hour	0.01 ppm (26 µg/m^3)	--	--

Sources: 40 Code of Federal Regulations (CFR) Part 50, 17 California Code of Regulations (CCR) §§ 70200

Notes:

ppm = parts per million

µg/m^3 = micrograms per cubic meter

mg/m^3 = milligrams per cubic meter

PM_{10} = Particulate matter less than 10 microns

$PM_{2.5}$ = Particulate matter less than 2.5 microns [1] Standards for ozone, CO, SO_2 (1 and 24 hour), NO_2, PM_{10}, PM $_{2.5}$, and VRP are values that are not to be exceeded. All others are not to be equaled or exceeded.

[2] Short-term standards (averaging times of 24 hours or less) for CO and SO_2 are not to be exceeded more than once per year.

[3] Standard attained when expected number of days/year with maximum hourly average concentration above standard is equal to or less than one.

[4] Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years.

[5] Not to be exceeded more than once per year on average over 3 years.

[6] 98th percentile, averaged over 3 years.

[7] Annual mean, averaged over 3 years.

[8] 3-year average of weighted annual mean concentrations.

[9] Annual Mean.

[10] Based on the 3-year average of the 98th percentile of the yearly distribution of 1-hour daily maximum concentrations.

[11] The 3-year average of the 99th percentile of the daily maximum 1-hour average must not exceed 0.075 ppm.

[12] Standard is based on rolling 3-month average.

[13] Extinction coefficient of 0.23 per kilometer --- visibility of 10 miles or more due to particles when relative humidity is less than 70 percent

The project study area is located in the Mojave Desert Air Basin (MDAB) and is under the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD). The portion of the MDAB in which the project area is located is designated as moderate nonattainment for the state ozone standard, nonattainment for both the state and the federal particulate matter less than 10 microns in size (PM_{10}) standards, attainment for Federal ozone standard, and attainment or unclassified for the State and Federal carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter less than 2.5 microns ($PM_{2.5}$) standards. Table 3.2-2 summarizes the federal and State attainment status of criteria pollutants for the project site area based on the NAAQS and CAAQS, respectively.

Table 3.2-2. Federal and State Attainment Status of Criteria Pollutants in the Project Region of the Mojave Desert Air Basin[a]

Pollutant	Attainment Status[b]	
	Federal	State
O_3	Attainment	Moderate Nonattainment
CO	Attainment	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
PM_{10}	Nonattainment	Nonattainment
$PM_{2.5}$	Attainment	Attainment/Unclassified

Source: California Air Resources Board 2011 (http://www.arb.ca.gov/desig/desig.htm)
Notes:
a Attainment status for the site area only, not the entire MDAB.
b Attainment = Attainment or Unclassified.

3.2.1.3 Criteria Air Pollutants

The following is a general description of the criteria air pollutants that would be emitted by the project's construction and operation and a summary of the monitored concentrations for each pollutant at sites near to the project site. The MDAQMD has 7 monitoring stations to measure air quality. The most representative MDAQMD monitoring stations within the MDAQMD are the Barstow Station and Victorville Station, which have been used to represent the background air quality conditions for the project site. Table 3.2-3 provides a summary of the last three years of available ambient monitoring data. In addition, the PM_{10}, $PM_{2.5}$ and ozone concentrations from air monitoring stations at the Mojave National Preserve and Jean, Nevada, are provided in Table 3.2-4. These two stations are closer to the project site than MDAQMD's Barstow and Victorville stations; however, the available air quality data from the Mojave National Preserve and Jean stations include only PM_{10}, $PM_{2.5}$ and ozone concentrations. *As shown in Table 3.2-2, the only pollutants which are not in attainment with both Federal and state standards are ozone and PM_{10}, both of which are monitored in the nearby Mojave National Preserve and Jean stations.*

Table 3.2-3. Ambient Air Quality Monitored at the Barstow and Victorville Stations

Pollutant	Standard	2009	2010	2011
Carbon Monoxide (CO) – From Barstow Station				
Maximum 1-hr concentration (ppm)		1.2	1.3	*
Number of Days Exceeded:	State: >20 ppm	0	0	*
	Federal: >35 ppm	0	0	*
Maximum 8-hr concentration		0.9	0.9	1.35
Number of Days Exceeded:	State: >9 ppm	0	0	0
	Federal: >9 ppm	0	0	0

Table 3.2-3. Ambient Air Quality Monitored at the Barstow and Victorville Stations

Pollutant	Standard	2009	2010	2011
Ozone (O_3) – From Barstow Station				
Maximum 1-hr concentration (ppm)		0.095	0.097	0.093
Number of Days Exceeded	State: >0.09 ppm	1	1	0
Maximum 8-hr concentration		0.086	0.078	0.083
Number of Days Exceeded:	State: >0.07 ppm	18	7	35
	Federal: >0.075 ppm	5	1	9
Coarse Particulates (PM_{10}) – From Barstow Station				
Maximum 24-hr concentration (µg/m^3)		76	38	108
Number of Days Exceeded:	State: >50 µg/m^3	2	0	2
	Federal: > 150 µg/m^3	0	0	0
Annual arithmetic average concentration (µg/m^3)		26.8	18.8	22.6
Exceeded for the year:	State: > 20 µg/m^3	Yes	No	No
Fine Particulates ($PM_{2.5}$) – From Victorville Station				
Maximum 24-hr concentration (µg/m^3)		20	18	15
Number of Days Exceeded:	Federal: >35 µg/m^3	0	0	0
Annual arithmetic average concentration (µg/m^3)		8.9	72	*
Exceeded for the year:	State: > 12 µg/m^3	No	No	*
	Federal: > 15 µg/m^3	No	No	*
Nitrogen Dioxide (NO_2) – From Barstow Station				
Maximum 1-hr concentration (ppm)		0.060	0.062	0.077
Number of Days Exceeded:	State: >0.18 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0.016	0.017	0.017
Exceeded for the year:	State: > 0.030 µg/m^3	No	No	No
	Federal: > 0.053 µg/m^3	No	No	No
Sulfur Dioxide (SO_2) – From Victorville Station				
Maximum 24-hr concentration (ppm)		0.005	0.007	0.007
Number of Days Exceeded:	State: > 0.04 ppm	0	0	0
	Federal: > 0.14 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0	0	0.001
Exceeded for the year:	Federal: > 0.030 ppm	No	No	No

Sources: EPA and CARB websites: www.epa.gov/air/data/index.html and www.arb.ca.gov/
*Insufficient data
µg/m^3 = micrograms per cubic meter
ppm = parts per million

Table 3.2-4. Ambient Air Quality Monitored at the Mojave National Preserve and Jean, Nevada Stations

	Air Quality Measurements[1]					
	PM_{10} (µg/m^3)		$PM_{2.5}$ (µg/m^3)		Ozone (ppm)	
Location	**Annual**	**24-hour**	**Annual**	**24-hour**	**8-hour**	**1 hour**
San Bernardino County, California						
Mojave National Preserve	--	--	--	--	0.080	0.088
Clark County, Nevada						
Jean	--	79	--	12.6	0.083	0.085

Source: EPA http://www.epa.gov/airdata/ad_rep_mon.html
Notes:
µg/m^3 = micrograms per cubic meter
ppm = parts per million
[1] Data for 2011.

Ozone (O_3)

In the presence of ultraviolet radiation, both nitrogen oxides (NO_x) and volatile organic compounds (VOCs) go through a number of complex chemical reactions to form ozone. Table 3.2-3 includes the maximum hourly and 8-hour concentration of O_3 and the number of days O_3 exceeds the federal and State standards. As shown in Table 3.2-3, ozone continues to exceed the State 1-hour standard and both the federal and State 8-hour ozone standards. The project site is within an area designated that is in attainment for the federal ozone standard and nonattainment for State ozone standards.

Carbon Monoxide (CO)

CO is primarily a byproduct of motor vehicle exhaust, which contributes more than two-thirds of all CO emissions nationwide. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions. These emissions can result in high concentrations of CO, particularly in local areas with heavy traffic congestion. Other sources of CO emissions include industrial processes and fuel combustion in sources such as boilers and incinerators. Despite an overall downward trend in concentrations and emissions of CO, some metropolitan areas still experience high levels of CO. Table 3.2-3 summarizes the CO monitoring data collected over the past three years. The project site area is located within a region designated as an attainment region for the State and federal CO standards.

Nitrogen Dioxide (NO_2) and Nitrogen Oxides (NO_x)

Nitrogen dioxide is a reddish brown, highly reactive gas that is formed in the ambient air through the oxidation of nitric oxide. NO_x, the generic term for a group of highly reactive gases that contain nitrogen and oxygen in varying amounts, plays a major role in the formation of ozone, particulate matter (PM), and acid rain. NO_x emissions result from high-temperature combustion processes such as vehicle exhaust emissions and power plants. Home heaters and gas stoves can also produce substantial amounts of NO_2 in indoor settings. The majority of the NO_x emitted from combustion sources is in the form of nitric oxide (NO), while the balance is mainly NO_2. NO is oxidized by O_3 in the atmosphere to NO_2 but some level of photochemical activity is needed for this conversion. Table 3.2-3 summarizes the NO_2 monitoring data collected over the past three years. The project site area is designated in attainment of the State and federal NO_2 standards.

Particulate Matter (PM)

PM pollution consists of very small aerosol and solid particles floating in the air. PM is a mixture of materials that can include smoke, soot, dust, salt, acids, and metals. Some PM, such as pollen, is naturally occurring. PM also forms when gases emitted from motor vehicles and industrial sources undergo chemical reactions in the atmosphere. The EPA currently regulates two types of PM emissions, PM_{10} and $PM_{2.5}$. PM_{10} refers to particles less than or equal to 10 microns in diameter and $PM_{2.5}$ refers to particles less than or equal to 2.5 microns in diameter.

Respirable Particulate Matter (PM_{10}). PM_{10} can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere. Gaseous emissions of pollutants like NO_x, sulfur oxides (SO_x), VOCs, and ammonia, given the right meteorological conditions, can form PM in the form of nitrates (NO_3), sulfates (SO_4), and organic particles. These pollutants are known as secondary particulates, because they are not directly emitted, but are formed through complex chemical reactions in the atmosphere. Table 3.2-3 summarizes the ambient PM_{10} monitoring data collected over the past

three years. The table includes the maximum 24-hour and annual arithmetic average concentrations and the number of days above the federal and State standards. The project site area is designated nonattainment of the State and federal PM10 standards.

Fine Particulate Matter ($PM_{2.5}$). Fine particulate matter, or $PM_{2.5}$, is derived mainly from either the combustion of materials, or from precursor gases (SO_x, NO_x, and VOCs) through complex reactions in the atmosphere. $PM_{2.5}$ consists mostly of sulfates, nitrates, ammonium, elemental carbon, and a small portion of organic and inorganic compounds. Table 3.2-3 summarizes the ambient $PM_{2.5}$ monitoring data collected over the past three years. The project site area is designated in attainment of the State and federal $PM_{2.5}$ standards.

Sulfur Dioxide (SO_2)

Sulfur dioxide is typically emitted as a result of the combustion of a fuel containing sulfur. Fuels such as natural gas contain very little sulfur and consequently have very low SO_2 emissions when combusted. By contrast, fuels high in sulfur content such as coal or heavy fuel oils can emit very large amounts of SO_2 when combusted. Sources of SO_2 emissions come from every economic sector and include a wide variety of fuels, gaseous, liquid and solid.

As shown in Table 3.2-2, the MDAB is designated attainment or unclassified for SO_2 State and federal ambient air quality standards. Due to the restrictions for the use of high sulfur fuels, reduction in gasoline and diesel sulfur contents and reduction in SO_2 emissions from other industrial sources (such as refineries), SO_2 pollution is no longer a major air quality concern in most of California including the project site area, which is designated in attainment of the State and Federal SO_2 standards.

Summary

As discussed above and presented in Table 3.2-2, the project area is designated nonattainment for the State ozone standard and the State and federal PM_{10} standards. The project area is designated as attainment for the federal ozone standard and the $PM_{2.5}$, CO, NO_2, and SO_2 Federal and State standards.

3.2.1.4 Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill and the chronically ill, especially those with cardio-respiratory diseases.

Residential areas are also considered to be sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial and commercial areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

The nearest residential receptor in the project is located at the northeast corner of the intersection of Interstate 15 (I-15) and Yates Well Road, approximately 2 miles east of the project study area and approximately 250 feet from a potential project construction haul route. The hotels in Primm, Nevada, are located approximately 1.5 miles to the northeast. The Primm

Valley Golf Club is located adjacent to the southeast side of the project study area along I-15. The Primm Valley Golf Club golf course is considered a less sensitive land use than the residence and hotels. There are no sensitive receptors (schools, hospitals, etc.) located near the project site.

3.2.2 Applicable Regulations, Plans, and Standards

3.2.2.1 Federal

The MDAQMD is responsible for issuing federal New Source Review (NSR) permits and has been delegated enforcement of the New Source Performance Standards (NSPSs). The federal NSR program requires air quality construction and operating permits for stationary sources when they exceed specific emissions thresholds for nonattainment pollutants, NSR air quality permits, and for attainment pollutants, Prevention of Significant Deterioration (PSD) air quality permits. The NSPSs are emission control/performance standards for specific types of stationary sources, such as boilers, cement kilns, and gas turbines. However, this project would not include stationary sources of air pollution that would have emissions high enough to trigger federal air quality permitting, or that would be subject to any of the NSPSs.

The project site is located in a federal nonattainment area and requires the approval of a federal agency (BLM). Therefore, the proposed facility would be subject to the general conformity regulations (40 CFR Part 93). The project area is classified ***moderate*** nonattainment of the federal PM_{10} ambient air quality standard. The general conformity emissions applicability threshold for this nonattainment classification is 100 tons/year of PM_{10} emissions. The EPA has set emission standards for non-road diesel engines, including those used on construction cranes. These standards are published in 40 CFR Part 89.

3.2.2.2 State

As discussed above in Section 3.2.1.2, CARB has established CAAQS for many of the same pollutants covered under the federal NAAQS that are as stringent as or more stringent than the NAAQS. Pollutants regulated under these standards include O_3, NO_2, CO, PM_{10}, $PM_{2.5}$, SO_2, lead, sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. Additional information regarding the CAAQS that are relevant to the Project is provided Section 3.2.1.2.

CARB also has on-road and off-road engine emission reduction programs that indirectly affect the project's emissions through the phasing in of cleaner on-road and off-road equipment engines. Additionally, CARB has a Portable Equipment Registration Program that allows owners or operators of portable engines and associated equipment to register their units under a statewide portable program to operate their equipment, which must meet specified program emission requirements, throughout California without having to obtain individual permits from local air districts.

The State has also enacted a regulation for the reduction of diesel particulate matter (DPM) and criteria pollutant emissions from in-use off-road diesel-fueled vehicles (California Code of Regulations [CCR] Title 13, Article 4.8, Chapter 9, Section 2449). This regulation provides target emission rates for PM and NO_x emissions from owners of fleets of diesel-fueled off-road vehicles and applies to equipment fleets of three specific sizes and the target emission rates are reduced over time (CARB 2007).

3.2.2.3 Local

Mojave Desert Air Quality Management District (MDAQMD) Rules and Regulations

The MDAQMD has primary responsibility for regulating stationary sources of air pollution situated within its jurisdictional boundaries. To this end, the MDAQMD implements air quality programs required by State and federal mandates, enforces rules and regulations based on air pollution laws, and educates businesses and residents about their role in protecting air quality. The MDAQMD is also responsible for managing and permitting existing, new, and modified sources of air emissions within the County. The applicable rules and regulations include:

- **Rule 201 – Permits Required**. This rule requires an Authority to Construct and Permit to Operate before the construction or operation, respectively, of non-exempt emission sources.
- **Rule 401 – Visible Emissions**. This rule limits visible emissions from emissions sources. This rule prohibits discharge of any emissions, other than uncombined water vapor, for more than three minutes in any hour.
- **Rule 402 – Nuisance.** This rule restricts emissions that would cause nuisance or injury to people or property (identical to California Health and Safety Code 41700). This rules states that a person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.
- **Rule 403 – Fugitive Dust.** A person shall not cause or allow the emissions of fugitive dust from any transport, handling, construction or storage activity so that the presence of such dust remains visible in the atmosphere beyond the property line of the emission source (does not apply to emissions emanating from unpaved roadways open to public travel or farm roads). This exclusion shall not apply to industrial or commercial facilities.
- **Rule 403.2 – Fugitive Dust Control for the Mojave Desert Planning Area.** This rule requires that fugitive dust control measures are implemented during a variety of activities, including construction and activities on BLM land. This rule aims to ensure that the NAAQS for PM_{10} will not be exceeded due to anthropogenic sources of fugitive dust within the Mojave Desert Planning Area, and to implement the control measures contained in the Mojave Desert Planning Area Federal PM_{10} Attainment Plan.

3.3 Climate Change

3.3.1 Environmental Setting

3.3.1.1 Climate Change

There is general scientific consensus that climate change is occurring and that human activity contributes to that change. Man-made emissions of GHGs, if not sufficiently curtailed, are likely to contribute further to continued increases in global temperatures. Increases in global temperature will cause a reduction in the polar ice caps and increase sea level, which will flood low lying areas of the world. Additionally, climate change will shift rainfall patterns that will cause significant impacts to agriculture and fresh water availability worldwide.

3.3.1.2 Greenhouse Gases

Generation of electricity can produce GHGs in addition to the criteria air pollutants that have been traditionally regulated under the Federal and State Clean Air Acts. GHGs are so named because of their ability to prevent heat from the surface of the earth from escaping to space. The principal climate-change gases resulting from human activity that enter and accumulate in the atmosphere are listed below.

Carbon Dioxide (CO_2): CO_2 enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and chemical reactions (e.g., the manufacture of cement). CO_2 is also removed from the atmosphere (or “sequestered”) when it is absorbed by plants as part of the biological carbon cycle.

Methane (CH_4): CH_4 is emitted during the production and transport of coal, natural gas, and oil. CH_4 emissions also result from livestock and agricultural practices and the decay of organic waste in municipal solid waste landfills.

Nitrous Oxide (N_2O): N_2O is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.

Fluorinated Gases: hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6) are synthetic, powerful climate-change gases that are emitted from a variety of industrial processes. Fluorinated gases are often used as substitutes for ozone-depleting substances (i.e., chlorofluorocarbons, hydrochloro-fluorocarbons, and halons). These gases are typically emitted in smaller quantities, but because they are potent climate-change gases, they are sometimes referred to as high Global Warming Potential (GWP) gases.

GHG emissions in the United States come mostly from energy production. Energy-related carbon dioxide emissions resulting from fossil fuel exploration and use account for approximately three-quarters of the human-generated GHG emissions in the United States, primarily in the form of carbon dioxide emissions from burning fossil fuels. More than half the energy-related emissions come from large stationary sources such as power plants; approximately a third comes from transportation; while industrial processes, agriculture, forestry, other land uses, and waste management make up a majority of the remainder of sources (EPA 2012a). For solar power energy generation facilities, the stationary source GHG emissions are much smaller than fossil fuel-fired power plants.

Global warming potential is a relative measure, compared to carbon dioxide, of a compound’s residence time in the atmosphere and ability to warm the planet. Mass emissions of GHGs are *mathematically* converted into carbon dioxide equivalent (CO_{2e}) emissions for ease of comparison.

3.3.1.3 Forecasts of Impacts of Climate Change in the Local Landscape

Geologists in particular link changes to flooding frequency and severity to climate change. Higher intensity storms with increases in rainfall and runoff are forecast under some modeled projections of climate change in the Southwest. Flood risks are likely to become greater as winter precipitation increases under changing climate conditions (Robins and others 2009).

3.3.1.4 Recent Measures in Place for Climate Change Adaptation in the Local Landscape

Development of renewable energy installations on BLM public lands in the Ivanpah Valley will facilitate a shift away from the dominant use of non-fossil fuels in the United States. With development, net carbon emissions to the atmosphere may be reduced in coming years and thus *may* reduce the pace of climate change.

3.3.2 Applicable Regulations, Plan, and Standards

3.3.2.1 Federal

U.S. Environmental Protection Agency (EPA)

On April 2, 2007, in *Massachusetts v. USEPA*, 549 U.S. 497 (2007), the Supreme Court found that GHGs are air pollutants covered by the Clean Air Act (CAA). The Court held that the EPA must determine whether or not emissions of GHGs from new motor vehicles cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the EPA is required to follow the language of section 202(a) of the CAA. The Supreme Court decision resulted from a petition for rulemaking under section 202(a) filed by more than a dozen environmental, renewable energy, and other organizations.

On April 17, 2009, the Administrator signed proposed endangerment and cause or contribute findings for GHGs under Section 202(a) of the CAA. The EPA held a 60-day public comment period, which ended June 23, 2009, and received over 380,000 public comments. These included both written comments as well as testimony at two public hearings in Arlington, Virginia, and Seattle, Washington. The EPA carefully reviewed, considered, and incorporated public comments and has now issued these final Findings.

The EPA found that six GHGs taken in combination endanger both the public health and the public welfare of current and future generations. The EPA also found that the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the air pollution that endangers public health and welfare under CAA section 202(a). These Findings were based on careful consideration of the full weight of scientific evidence and a thorough review of numerous public comments received on the Proposed Findings published April 24, 2009. These Findings became effective on January 14, 2010 (EPA 2010).

Specific GHG Regulations that the EPA has adopted to date are as follows:

40 CFR Part 98. Mandatory Reporting of Greenhouse Gases Rule

This rule requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of CO_{2e} emissions per year (EPA 2009). The Proposed Action would not trigger GHG reporting *under* this regulation.

40 CFR Part 52. Proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule

The EPA recently mandated that PSD requirements apply to facilities whose stationary source CO_{2e} emissions exceed 75,000 tons per year (EPA 2012b). The Proposed Action would not trigger PSD permitting *under* this regulation.

3.3.2.2 State

Executive Order (EO) S-3-05

EO S-3-05 was established by Governor Arnold Schwarzenegger in June 2006. EO S-3-05 establishes statewide emission reduction targets through the year 2050:

- by 2010, reduce GHG emissions to 2000 levels;
- by 2020, reduce GHG emissions to 1990 levels; and
- by 2050, reduce GHG emissions to 80 percent below 1990 levels.

This EO does not include any specific requirements that pertain to the proposed Stateline solar project. However, actions taken by the State to implement these goals may affect the project, depending on the specific implementation measures that are developed.

Executive Order (EO) S-14-08

EO S-14-08 was established by Governor Arnold Schwarzenegger in November 2008. Executive Order S-14-08 establishes a Renewable Portfolio Standard (RPS) for all retail sellers of electricity. The specifics of this executive order include the following:

- Requires retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020;
- Requires various state agencies to streamline processes for the approval of new renewable energy facilities and determine priority renewable energy zones; and
- Establishes the requirement for the creation/adoption of the Desert Renewable Energy Conservation Plan (DRECP) process for the Mojave and Colorado Desert regions.

This Executive Order does not include any specific requirements that pertain directly to the Proposed Action. However, this project, as a renewable energy project, will help the utility contracting the power from this project to meet the established RPS standard.

Senate Bill 1368

Senate Bill 1368 (SB 1368) was enacted in 2006, and required the California Public Utilities Commission (CPUC) to establish a CO_2 emissions standard for base load generation owned by or under long-term contract with publicly owned utilities. The CPUC established a GHG Emissions Performance Standard (EPS) of 1,100 pounds of CO_2 per megawatt-hour. SB 1368 also requires the posting of notices of public deliberations by publically owned companies on the CPUC website and establishes a process to determine compliance with the EPS. The proposed solar farm, as a renewable energy generation facility, is determined by rule to comply with the GHG EPS requirements of SB 1368.

Assembly Bill 32

Assembly Bill 32 (AB 32), also known as the California Global Warming Solutions Act of 2006, was established in 2006 to mandate the quantification and reduction of GHGs to 1990 levels by 2020. The law establishes periodic targets for reductions, and requires certain facilities to report emissions of GHGs annually. The bill also reserves the ability to reduce emissions targets lower than those proposed in certain sectors which contribute the most to emissions of GHGs, including transportation.

Additionally, the bill requires:

- GHG emission standards to be implemented by 2012; and
- *That* CARB develop an implementation program and adopt GHG control measures "to achieve the maximum technologically feasible and cost-effective GHG emission reductions from sources or categories of sources." CARB issued a draft Climate Change Scoping Plan in December 2008.

The AB 32 Scoping Plan contains the main strategies California will use to reduce the GHG that cause climate change. The scoping plan has a range of GHG reduction actions which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an AB 32 cost of implementation fee regulation to fund the program. These measures have been introduced through four workshops between November 30, 2007, and April 17, 2008. A draft scoping plan was released for public review and comment on June 26, 2008, followed by more workshops in July and August 2008. The proposed scoping plan was released on October 15, 2008, and approved at the Board hearing on December 12, 2008.

Per CARB's Updated Scoping Plan Fact Sheet January 21, 2010 (http://www.arb.ca.gov/cc/facts/scoping_plan_fs.pdf), the following has occurred:

- 12 of 30 CARB regulations approved, including all nine Discrete Early Actions;
- Approved measures provide approximately 70 million metric tons (MT) CO_{2e} in 2020, 40% of the 2020 goal of reducing 169 million MT CO_{2e}; and
- First year of Mandatory Reporting complete - 97% compliance rate.

The mandatory reporting requirements are effective for electric generating facilities with a nameplate capacity equal or greater than 1 megawatt (MW) capacity if their emissions exceed 25,000 MT per year. However, the Proposed Action, as a solar energy generation project, is exempt from the mandatory GHG emission reporting requirements for electricity generating facilities as currently required by the CARB for compliance with the California Global Warming Solutions Act of 2006 (AB 32 Núñez, Statutes of 2006, Chapter 488, Health and Safety Code sections 38500 et seq.).

On December 16, 2010, the structure of the cap and trade regulations were adopted and specific enabling regulations must be adopted by CARB by October 2011 to allow these requirements to become effective January 2012. The approved GHG cap and trade regulations still have several remaining action items and will have several amendments until they will have final state approval by the end of 2011. However, the project would not be subject to this regulation since the project's regulated operating emissions would be well below the regulation's 25,000 MT CO_{2e} annual emissions applicability threshold.

Senate Bill X1-2

On April 12, 2011, Governor Edmund G. Brown, Jr. signed Senate Bill X1-2 into law to codify the ambitious 33 percent by 2020 goal. SBX1-2 directs CPUC's Renewable Energy Resources

Program to increase the amount of electricity generated from eligible renewable energy resources per year to an amount that equals at least 20 percent of the total electricity sold to retail customers in California per year by December 31, 2013, 25% by December 31, 2016 and 33 percent by December 31, 2020. The new RPS goals applies to all electricity retailers in the state including publicly owned utilities (POUs), investor-owned utilities, electricity service providers, and community choice aggregators. This new RPS preempts CARB's 33 percent Renewable Electricity Standard.

This Senate Bill does not include any specific requirements that pertain directly to the Proposed Action. However, this project, as a renewable energy project, would help the utility contracting the power from this project to meet the established RPS standard.

3.4 Archaeological and Built-Environment

3.4.1 Environmental Setting

This section describes archaeological and built-environment resources located within the area of potential effects (APE) for the Proposed Action and project alternatives. The locations of Proposed Action facilities, including the photovoltaic (PV) generating facility, the 220-kilovolt (kV) generation interconnection (gen-tie) line, operations and maintenance facilities, and access road are shown in Chapter 2. Chapter 2 also includes a description of construction, operation, and maintenance techniques used for the Proposed Action as well as a detailed discussion of alternatives.

The APE corresponds to the project area of analysis, as follows:

- *The full extent of the ROW application area.*
- *Individual historic built-environment resources located outside of the areas described above that could sustain indirect non-physical effects, including visual, auditory, and atmospheric effects, as a result of the undertaking, BLM's issuance of a ROW grant for the Stateline Solar Farm Project.*
- *For ethnographic resources, the project area of analysis or APE is expanded to take into account traditional use areas and traditional cultural properties. These resources are often identified in consultation with Native Americans and other ethnic groups, and issues that are raised by these groups may define the area of analysis.*

Descriptions provided in this section are based on information from the Class III Cultural Resources Inventory (Chandler and others 2012), which consisted of surveys *which encompassed the entire Project Study Area, as defined in Section 1.0 and Section 2.8.2. Windshield surveys, consultation, and review of historic maps were used to identify potential indirect effects in the portion of the APE outside of the Project Study Area.*

3.4.1.1 Cultural Setting

BLM Manual 8100 defines cultural resources as a definite location of human activity, occupation, or use identifiable through field inventory, historical documentation, or oral evidence. Cultural resources include archaeological, historic, and architectural sites, structures, or places with important public and scientific uses. They may include definite locations or traditional cultural or religious importance to specified social or cultural groups.

Understanding the context in which archaeological and built-environment resources exist is imperative to evaluating impacts of projects on those resources.

Prehistoric

Research since the early 1980s has led to refinements of the prehistoric chronology of the Mojave Desert region. This research has contributed new information that has expanded our understanding of the prehistoric chronology of the Mojave Desert region. Sutton and others (2007) discuss these refinements in depth, and present a slightly modified chronological sequence to that of Warren (1984). Sutton and others (2007) place their chronology in the context of climatic periods (Pleistocene, early Holocene, middle Holocene, and late Holocene) separated further by cultural complexes based on technological advances.

That humans were present in the Mojave Desert before 10,000 B.C. cannot be discounted based on increasing evidence of earlier occupations in other parts of North America. The oldest identified cultural complex in the Mojave Desert is Clovis (ca. 10,000-8000 B.C.). This complex is characterized by the long, fluted Clovis projectile point and Clovis-like points known as Great Basin Concave Base points (Basgall and Overly 2004).

During the early Holocene the Lake Mojave period (8000 to 5000 B.C.) is characterized by Great Basin Stemmed (Lake Mojave and Silver Lake) points, numerous bifaces including crescents, unifaces, and sometimes groundstone artifacts. Social groups of the Lake Mojave period appear to have been small, highly mobile, and attracted to a variety of environments where water was available.

During the Mid-Holocene climatic warming and desiccation in the Great Basin, including the Mojave Desert, previous researchers such as Warren (1984) saw Pinto period material and settlement patterns reflecting a response to the change in environment. In this scenario, the Pinto period began after the Lake Mojave period at about 5,000 B.C., corresponding roughly with the Holocene Maximum warming trend. Information collected in the past two decades suggests that the Pinto period began during the early Holocene and overlapped the Lake Mojave period. Radiocarbon dates from Pinto Basin, Little Lake, Fort Irwin, and Twentynine Palms indicate ages of at least 9,000 years for some Pinto sites (Sutton and others 2007). Although there is still some debate about the inception of the Pinto complex, it is probably older than had been previously thought.

Toward the end of the middle Holocene, the climatic conditions associated with the Holocene warming trend may have resulted in very low population densities, and even temporary abandonment, of portions of the Mojave Desert. Very few sites have been dated to a time span between about 3000 and 2000 B.C. that separates the Pinto and Gypsum complexes. The appearance of Elko Corner-notched, Humboldt Concave-base, and Gypsum Contracting-stemmed projectile points in sites signaled the start of the Gypsum period, as temperatures began to shift at the beginning of the late Holocene (Warren 1984; Sutton and others 2007).

Archaeological information suggests an increase in population, especially in the western Mojave during the Saratoga Spring period (A.D. 500 to 1200). Projectile points indicate that the bow and arrow were introduced to the Mojave Desert during this period. These technological advances are thought to have improved hunting efficiency and increased the carrying capacity of the land, resulting in a rise in population (Sutton and others 2007).

Numerous sites in the Mojave Desert date to the Late Prehistoric period (A.D. 1200 to Contact). The several tribes that occupied the Mojave Desert at the time of contact with Europeans are believed to have developed from the separate cultural complexes in the Late Prehistoric period (Warren 1984; Sutton and others 2007). Hakataya and Anasazi cultural influences remained in the southern and eastern parts of the region, respectively. By approximately A.D. 1000, the Numic speakers of the western Mojave Desert formed distinct language groups.

Ethnographic

A broad territory across southern Utah, southern Nevada and northern Arizona and, following the Colorado River, southward into California as far as present-day Blythe was once occupied by the Southern Paiute. The Southern Paiute belong to the Southern Numic branch of the Uto-Aztecan language family. Ethnographers have divided the Southern Paiute into 16 identifiable groups, which includes the Chemehuevi, the southernmost of the groups. There was no overarching tribal organization, with each group a geographic unit associated with a defined territory.

The primary territory occupied by the Southern Paiute-Chemehuevi was west of the Colorado River, extending approximately from present-day Blythe to just north of Needles, and into California halfway to Twentynine Palms (Kelly and Fowler 1986; Earle 1997). The name Chemehuevi is a Mojave word, possibly meaning "mixed with all", but they call themselves Nuwuwu, or "the people" (Laird 1976). The Chemehuevi language is a dialect of the Ute language of the Numic branch of the Uto-Aztecan stock, which extends from the Great Basin of North America through Mexico (Bean 1978).

Historic

Since European contact in the late 18th century, the history of the Ivanpah Valley is characterized by several themes including exploration, mining, transportation, development of utility corridors, and land development. Each of these contributed to the development of the area.

Some of the earliest explorations of the lower Great Basin region are documented in the diaries of Padre Francisco Garcés during his overland expedition in 1776. Beginning the journey with Juan Baptista de Anza, Garcés separated from de Anza near present-day Yuma, Arizona. Garcés took a path following the Colorado River, and then the Mojave River, leading the priest across California and eventually to Mission San Gabriel. He and his party made their return trip following a northern route through portions of the San Joaquin Valley before returning to the Mojave River and then, to Yuma, roughly re-tracing the route that had first brought them westward (Coues 1900). Later historical accounts of the Ivanpah Valley were provided by travelers who passed near the valley on their way to eastern and western destinations, usually by way of the Old Spanish Trail, the Mojave Road, or the Mormon Trail. Several notable explorers made their way through the region during the early to mid-19th century, including Jedediah Smith, Kit Carson, and John C. Fremont (Durham 1997). In fact, the Ivanpah Valley was largely used as a travel route due to a lack of water in the region.

The 1849 gold rush brought thousands of miners and settlers to California. Although most of the gold-seekers settled farther to the north, some sought wealth in the Mojave Desert. In 1869, the Piute Company staked over 100 claims in the Clark and Yellow Pine mining districts after the discovery of silver and copper in the Clark Mountains, west of the project facility site (Vrendenburgh and others 1981). As a result of this mining activity the town of Ivanpah was established in the foothills of the Clark Mountains. Ivanpah became the trading center for the Clark mining district and a map from 1885 shows a wagon road that passed through the project site, connecting Ivanpah to Las Vegas (General Land Office [GLO] 1885). Ivanpah boasted commercial buildings, saloons, stores, shoe-making and blacksmithing shops, hotels, a smelter, and two mills. A yield between 3 to 4 million dollars in silver is estimated to have been taken from the mines surrounding Ivanpah.

Mining claims continued to be made in the region, particularly in the Clark Mountains. One mining operation of note is the old Colosseum Mine complex. Although gold was first noted on the property in 1865, exploratory mining did not occur until the early 1900s. After closing in the 1930s, the property remained dormant until the 1970s when a series of exploratory ventures took place. The property was acquired in 1986 and operated until 1993.

Ivanpah Valley has long been a transportation corridor. In the late 1800s, much of the Ivanpah Valley was serviced by the Old Salt Lake Road, via the North Fork of the Mojave River Route. The 1885 GLO map shows the main route to Ivanpah and shows roads leading from the town of Ivanpah north to Las Vegas. Locally travelled routes throughout the valley lead to natural springs that were utilized by miners and early ranchers (von Till Warren and Roske 1981).

The San Pedro, Los Angeles, and Salt Lake Railroad Company built a rail line from Los Angeles to Las Vegas and to the border with Utah in 1905. They purchased an existing rail route in Utah to make the connection to Salt Lake City. The route in California used the existing AT&SF track from Riverside to Barstow and Daggett and new track was laid from Daggett to Las Vegas and the Utah border. The route passed through Ivanpah Valley on the east side of Ivanpah Dry Lake. The railroad was acquired by the Union Pacific Railroad in 1921 (Robertson 1998). A railroad spur built north from the AT&SF main line at Goffs (west of Needles) by the California Eastern Railway Company reached the mining town of Ivanpah in 1902.

In the early 1900s, with the advent of the automobile, more travelers began to visit the desert. Several of these routes crossed the Ivanpah Valley, beginning with the Arrowhead Trail Highway. The Arrowhead Trail Highway served as the main thoroughfare from San Bernardino to Salt Lake City between 1914 and 1925. The southern portion of this route, followed the old National Trails Road (the precursor to Route 66, now Interstate-40), from San Bernardino through Barstow toward Needles. Before reaching Needles, the route turned northeast to Las Vegas, Nevada, via Searchlight, Nevada. In 1925, the California Highway Department realigned the Arrowhead Trail, to follow the Union Pacific Railroad from Daggett to a station at Manix, California, where it continued northeast into Ivanpah Valley. Here the road once again paralleled the Union Pacific Railroad on its way to Las Vegas. The new route was called US Route 91 (von till Warren 1980). The new and improved route brought a significant influx of travelers through this remote Mojave Desert region, which initiated the construction of present-day I-15 in the mid-1960s.

Ivanpah Valley served not only as a transportation route, but also as a corridor for electric transmission and communication lines. After the passage of the Boulder Canyon Project Act in 1929, a series of electric power transmission lines were built to transmit electricity from hydroelectric plants at Boulder Dam (now named Hoover Dam) to provide power to the growing population of Southern California, Nevada, and elsewhere. Two of these transmission lines cross the Project Study Area. The Boulder Transmission Lines 1, 2, and 3, cross the northern part of the Project Study Area only, while the Hoover Dam to San Bernardino Transmission Line crosses the southern portion of the Project Study Area and runs along the proposed Gen-tie Corridor.

3.4.1.2 Identified Archaeological and Built-Environment Resources – Stateline Solar Farm Site

Archival Research

A records search was conducted at the San Bernardino Archaeological Information Center (SBAIC) in Redlands, California in September 2009 (Chandler 2009). An updated record search was conducted in April 2011. The records search covered the entire Project Study Area plus a 1-mile buffer. The records search was conducted to determine the extent of previous surveys and the presence of previously documented archaeological sites, architectural resources, or traditional cultural properties. In addition, historic maps, including the GLO 1885 and 1933 plat maps and California topographic quadrangle maps from 1963, were reviewed. The Historic Property Data File for San Bernardino County was also reviewed to identify any properties within 1 mile of the project that have been listed on or determined eligible for listing on the National Register of Historic Places (NRHP), California Register of Historical Resources (CRHR), California Points of Historical Interest, California Landmarks, and National Historic Landmarks.

A search of the Sacred Lands File was conducted with the Native American Heritage Commission (NAHC) in Sacramento, California in September 2009. This search was requested to determine whether there are sensitive or sacred Native American resources in the vicinity of the project. In addition to the records search conducted with the SBAIC, and the search of the Sacred Land File, the BLM Archaeologist in the Needles Field Office was consulted to determine if BLM had any additional information regarding archaeological and built-environment resources within and near the project.

Site Types

The records search results identified 13 previously recorded resources (four archaeological sites, five built-environment resources, and four isolated finds).

Archaeological Resources

One of the archaeological resources is a U.S. Geological Survey (USGS) survey marker (P36-014501). In addition, an isolated ceramic insulator (P36-014499), and three isolated historic-period cans (P36-014500, P36-063199 and P36-063201) *were identified*. *Another three archaeological sites (a prehistoric ceramic scatter [P36-063192] and two historic period refuse scatters [P36-023155 and P36-063200]) were identified by the records search.*

Historic Built-Environment Resources

A historic-period power line corridor, Hoover Dam to San Bernardino Transmission Line, (P36-010315/NRHP-E-93-007), crosses the *area of the Proposed Action* and has been determined eligible for listing on the NRHP. *The Boulder Transmission Line, [P36-007694/NRHP-E-94-001]) also crosses within the Project Study Area* (*but not the area of the Proposed Action*)*, and is eligible for listing on the NRHP.* *Additional* built *environment* resources include the Arrowhead Trail Highway (State Route 31; P36-007689/CA-SBR-7689H); *and* segments of *two* historic-period roads (P36-013417/CA-SBR-12575H *and* P36-003048).

Archaeological Survey Overview

An intensive pedestrian survey was conducted of the *Project Study Area* (Chandler and others 2012). The survey covered the entire Project Study Area. It encompassed a total of 6,487 acres, and included all proposed project components and alternatives, as well as at least a 30-meter buffer around those areas. All areas were surveyed using transects at an interval no greater than 15 meters. In addition to recording all newly identified resources, an attempt was made to locate all previously recorded sites and isolates located within the survey area.

During the field survey phase of this project, an archaeological site was defined as consisting of at least three artifacts within 50 linear meters of each other or a single feature. Archaeological resources not meeting the site criteria were recorded as isolated finds. As discussed in Section 4.4.2, identified archaeological resources were also evaluated for eligibility *for listing in* the NRHP.

Impacts Outside the Project Area

Indirect effects on historic properties located outside of the project area must also be considered under NEPA, CEQA and Section 106. These can include visual, auditory, and atmospheric effects. These effects would be considered adverse if they significantly alter any of the characteristics of a historic property that qualify the property for inclusion in the NRHP.

Survey Results

Although located in a desert region, the Study Area is near Ivanpah Lake, which would have attracted early inhabitants. Lake sediments have been dated to just over 9500 B.P., indicating there was an Early Holocene lake. Ivanpah Lake was probably dry during several periods, a lake stand is indicated at circa 3500 years B.P., corresponding with the early part of the Gypsum Period. Although there is no direct evidence for lake stands during the Late Prehistoric, it is likely there was water in Ivanpah Lake at times during the Little Ice Age. The geology of the majority of the Project Study Area consists of lakebed sediments and alluvial fans that are Pleistocene to Holocene in age *(Geosphere Consultants 2008)*, suggesting that buried cultural deposits are possible.

The entire Project Study Area, an area larger than what is now encompassed within the Proposed Action and alternatives, was surveyed for the project. The survey confirmed the presence of several previously recorded resources and identified a number of additional archaeological and built-environment resources. Although the majority of the resources encountered during the survey date to the historic period, evidence of prehistoric habitation and other activities was also documented.

A total of 84 newly identified isolated finds (71 historic and 13 prehistoric) were identified within the survey area (Chandler and others 2012). The historic isolates are predominately historic period items such as metal cans and glass insulators. The prehistoric isolates consist of groundstone and flaked stone.

The 2012 formal Class III Survey Report for the Stateline Solar Farm Project identified 61 archaeological and built-environment resources, comprised of 52 newly-recorded sites and nine previously recorded sites (Chandler and others 2012). Of these sites, *29* are located within the project footprint for the Proposed Action and alternatives. Another three resources, the Boulder Dam-Los Angeles Transmission Line (P-007694), and two roads (P36-003048 and P36-013417), are outside of the proposed project footprint, but within the APE for indirect effects to historic built- environment resources. The remaining 28 archaeological resources are outside of the footprint of any of the action alternatives. Table 3.4-1 provides a summary of the resources documented by the survey.

Table 3.4-1. Archaeological and Built-Environment Resources *Identified in Surveys*

Primary Number (P36-)	Trinomial (CA-SBR-)	Field Designation	Site Type	Alternative				Buffer
				1	2	3	4	
Built-Environment Resources								
003048	3048H	Old Traction Road	Historic-period Road	-	-	-	-	-
007689	7689H	Arrowhead Trail Highway	Historic-period road	X	X	X	X	X
007694	7694H	Boulder Dam-Los Angles Transmission	Transmission line	-	-	-	-	X

Table 3.4-1. Archaeological and Built-Environment Resources *Identified in Surveys*

Primary Number (P36-)	Trinomial (CA-SBR-)	Field Designation	Site Type	Alternative				Buffer
				1	2	3	4	
		Line						
010315	10315H	Edison Company Hoover Dam-San Bernardino Transmission Line	Transmission line	X	X	X	X	X
013416	12574H	-	Telephone line and road	-	X	-	-	X
013417	12575H	-	Historic-period Road	-	-	-	-	X
021768	13934H	SL-30	Segment of Colosseum Road	X	-	-	-	X
Archaeological Resources								
014501	-	-	USGS survey marker	-	X	X	X	-
021759	13925H	SL-1	Historic-period refuse scatter	-	-	-	-	X
021760	13926H	SL-4	Historic-period refuse scatter	-	-	-	-	X
021761	13927H	SL-14	Historic-period refuse scatter	-	-	-	-	X
021763	13929H	SL-18	Historic-period refuse scatter	-	-	-	-	X
021764	13930H	SL-22	Historic-period wagon trail	X	X	X	X	X
021765	13931H	SL-24	Historic-period refuse scatter	-	-	X	-	-
021769	13935H	SL-31	Historic-period rock cairn	-	-	-	-	X
021770	13936H	SL-32	Historic-period rock cairn	-	-	-	-	X
021771	13937H	SL-34	Historic-period rock ring	-	-	-	-	X
021772	13938H	SL-35	Historic-period rock ring	X	-	X	-	-
021773	13939H	SL-36	Historic-period refuse scatter	X	-	X	-	-
021774	13940H	SL-39	Historic-period refuse scatter	X	-	X	-	-
021775	13941H	SL-40	Historic-period refuse scatter	X	-	X	-	-
021776	13942H	SL-41	Historic-period refuse scatter	X	-	X	-	-
021777	13943H	SL-42	Historic-period refuse scatter	X	-	X	-	-
021778	13944H	SL-43	Historic-period refuse scatter	X	-	X	-	-
021779	13945H	SL-47	Historic-period camp site	X	X	X	X	-
021780	13946H	SL-48	Historic-period rock cairn	X	X	X	X	-
012781	13947H	SL-50	Historic-period rock cairn	X	X	X	X	-

Table 3.4-1. Archaeological and Built-Environment Resources *Identified in Surveys*

Primary Number (P36-)	Trinomial (CA-SBR-)	Field Designation	Site Type	Alternative				Buffer
				1	2	3	4	
021782	13948H	SL-53	Historic-period rock cairn	-	-	-	-	X
021783	13949H	SL-54	Historic-period refuse scatter	X	X	X	X	-
021784	13950H	SL-59	Historic-period rock hearth	X	-	X	-	-
021785	13951H	SL-60	Possible modern survey marker	X	-	X	-	-
021786	13952H	SL-61	Historic-period refuse scatter	X	-	X	-	-
023155	14543H	-	Historic-period refuse scatter	-	-	-	-	X
063192	-	-	Prehistoric ceramic scatter	-	-	-	-	NRL
063200	-	-	Historic-period refuse scatter	-	-	-	-	NRL
024304	15483H	STL-1	Historic-period fence line	-	X	-	-	-
024305	15484H	STL-2	Historic-period rock alignment	-	X	-	-	-
24306	15485H	STL-3	Historic-period two track road	-	X	-	-	-
024307	15486H	STL-4	Historic-period refuse scatter	-	-	-	-	X
024308	15487H	STL-5	Historic-period earthen holding pond and refuse scatter	-	X	-	-	X
024309	15488/H	STL-6	Multi-component prehistoric seasonal camp and historic-period refuse scatter	-	-	-	-	X
024310	15489H	STL-8	Historic-period refuse scatter	-	-	-	-	X
024311	15490H	STL-9	Historic-period refuse scatter	-	-	X	-	-
024312	15491	STL-14	Three USGS survey markers	-	-	-	-	X
024313	15492	STL-21	Multi-component artifact scatter	-	-	-	-	X
024314	15493	STL-22	Prehistoric lithic scatter	-	-	-	-	X
024315	15494	STL-23	Prehistoric lithic scatter	-	-	-	-	X
024316	15495H	STL-24	USGLO survey marker	-	-	-	-	X
024317	15496	STL-25	Prehistoric temporary camp site	-	-	-	-	X
024318	15497/H	STL-26	Prehistoric lithic scatter	-	-	-	-	X
024319	15498H	STL-28	Historic-period refuse scatter	-	X	X	X	-
024320	15499H	STL-30	Historic-period	-	-	-	-	X

Table 3.4-1. Archaeological and Built-Environment Resources *Identified in Surveys*

Primary Number (P36-)	Trinomial (CA-SBR-)	Field Designation	Site Type	Alternative				Buffer
				1	2	3	4	
			refuse scatter					
024321	15500H	STL-31	Historic-period refuse scatter	-	-	-	-	X
024322	15501H	STL-32	Historic-period refuse scatter	-	-	-	-	X
024323	15502H	STL-33	Historic-period refuse scatter	-	-	-	-	X
024324	15503H	STL-35	USGLO survey marker	-	-	-	-	X
024325	15504H	STL-36	Historic-period two-track road	-	-	-	-	X
024327	15505H	STL-37	Historic-period telephone line	X	X	X	X	X
024327	15506	STL-202	Prehistoric temporary camp site	-	-	-	-	X
024328	15507/H	STL-204	Multi-component prehistoric seasonal camp and historic-period	-	-	-	-	X
024329	15508H	STL-206	USGLO survey marker	-	-	X	-	-

NRL =Not Relocated

3.4.2 Applicable Regulations, Plans, and Standards

3.4.2.1 Federal

National Environmental Policy Act (42 United States Code [U.S.C.] 4321 et. seq.)

Regulations for implementing NEPA (40 CFR Parts 1500-1508) require federal agencies to identify and assess reasonable alternatives to proposed actions. NEPA requires the analysis of the effect of federal undertakings on the environment to include the effect on cultural resources.

Federal Land Policy and Management Act of 1976 (FLPMA) as amended

FLPMA establishes policies and goals to be followed in administration of public lands by the BLM to include preservation of historic and archaeological resources.

National Historic Preservation Act of 1966, as Amended (NHPA)

Section 106 of the NHPA (16 U.S.C. 470), and its implementing regulations at 36 CFR 800, require federal agencies with jurisdiction over a proposed federal project to take into account the effect of the undertaking on historic properties listed or eligible for listing on the NRHP, and requires that the agencies afford the Advisory Council on Historic Preservation with an opportunity to comment on the undertaking. Section 106 also requires that the agency consult with the State Historic Preservation Office, affected Indian Tribes, and other interested parties on the undertaking.

Archaeological Resources Protection Act of 1979 (ARPA)

ARPA (16 U.S.C. 470) provides for the protection of archaeological resources and sites that are on public lands and Indian lands

Native American Graves Protection and Repatriation Act of 1990 (NAGPRA)

NAGPRA (25 U.S.C. 3001) provides a requirement for federal agencies and institutions that receive federal funding to return certain Native American cultural items, including human remains, funerary objects, sacred objects, and objects of cultural patrimony, to lineal descendants and cultural affiliated Indian tribes. For activities on federal lands, NAGPRA requires consultation with "appropriate" Indian tribes prior to the intentional excavation, or removal after inadvertent discovery, of several kinds of cultural items, including human remains and objects of cultural patrimony.

American Indian Religious Freedom Act of 1978 (AIRFA)

AIRFA enforces the right of Native Americans to have access to their sacred places. If a place of religious importance to Native Americans may be affected by an undertaking, AIRFA promotes consultation with Indian religious practitioners, which may be coordinated with Section 106 consultation.

Executive Order (EO) 13007 (1996), Protection and Preservation of Native American Sacred Sites

EO 13007 established that federal land stewards shall, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of such sacred sites. Where appropriate, agencies shall maintain the confidentiality of sacred sites.

EO 13175 (2000), Consultation and Coordination with Indian Tribal Governments

EO 13175 establishes regular and meaningful consultation and collaboration between the United States government and tribal officials in the development of federal policies that have tribal implications.

Antiquities Act of 1906

The Antiquities Act is the first law enacted to specifically establish that archaeological sites on public lands are important public resources, and obligated federal agencies that manage public lands preserve the scientific, commemorative, and cultural values of such sites on these lands.

3.4.2.2 State

California Environmental Quality Act of 1970, as amended

CEQA establishes statutory requirements for the formal review and analysis to discretionary projects causing a substantial adverse change in the significance of an historical or archaeological resource with a significant effect on the environment. CEQA defines a

substantial adverse change as demolition, destruction, relocation, or alteration activities which would impair historical significance.

Administrative Code; Title 14, § 4307

Title 14 § 4307 requires that no person shall remove, injure, deface or destroy any object of paleontological, archaeological, or historical interest or value.

Health and Safety Code § 7050.5

This code requires that construction or excavation be stopped near human remains until a coroner determines whether the remains are Native American; requires the coroner to contact the NAHC if the remains are Native American.

Health and Safety Code § 7051

This code addresses the removal of human remains from internment, and requires a place of storage while awaiting internment or cremation, with the intent to sell them or to dissect them with malice or wantonness as a public offense punishable by imprisonment in a state prison.

Health and Safety Code § 7052 and 7050.5

Section 7052 establishes that disturbance of Indian cemeteries is a felony. Section 7050.5 establishes that construction or excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American.

Penal Code, Title 14, § 622.5, 623

These sections establish that it is a misdemeanor offense for any person other than the owner to willfully damage or destroy archaeological or historical features on public or privately owned land.

Public Resources Code § 5020 to 5029.5

Section 5020 to 5029.5 created the California Historical Landmark (CHL) Committee and authorizes the Department of Parks and Recreation to designate Registered Historical Landmarks and Registered Points of Historical Interest. This section establishes the California Historic Resources criterion, and creates the CHL Committee and authorizes the Department of Parks and Recreation to designate CHLs and registered Points of Historical Interest; establishes criteria for the protection and preservation of historic resources.

Public Resources Code § 5097.5

Section 5097.5 provides that no person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological or historical feature, situated on

public lands, except with the express permission of the public agency having jurisdiction over the lands. Violation of § 5097.5 is a misdemeanor.

Public Resources Code § 5097.9 to 5097.991

Section 5097.9 to 5097.991 establishes regulations for the protection of Native American religious places; establishes the NAHC; establishes repatriation of Native American artifacts; and requires notification of discovery of Native American human remains to a most likely descendant.

Resolution Number 43

Resolution Number 43 requires all state agencies to cooperate with programs of archaeological survey and excavation, and to preserve known archaeological resources whenever reasonable.

Senate Bill 18

Senate Bill 18 provides that counties and cities address the protection of Native American Traditional Cultural Places during the development of general plans.

Senate Bill 922

Senate Bill 922 provides an exemption for Native American Graves, cemeteries, archaeological site information, and sacred places in the possession of the NAHC, state, or local agencies from the California Public Records Act.

3.4.2.3 Local

San Bernardino County General Plan

The Conservation Element of the San Bernardino County General Plan includes goals provided to address cultural resources. Goal CO 3 states that the County will preserve and promote its historic and prehistoric cultural heritage; Goal D/CO 6 promotes the protection of cultural resources within the Desert Region; and Goal M/CO 4 promotes the protection of cultural and paleontological resources within the Mountain Region. The San Bernardino County General Plan is not applicable to projects located entirely on federal land.

3.5 Environmental Justice

Executive Order 12898 (59 Federal Register [FR] 7629) directs Federal agencies to identify and address, as appropriate, potential disproportionately high and adverse human health and environmental impacts on minority and low-income populations. The U.S. Department of the Interior (DOI) is guided by the *Memorandum of Understanding on Environmental Justice and Executive Order 12898* (EPA 2011). Information on the environmental justice analysis is contained in *Environmental Justice: Guidance Under the National Environmental Policy Act* (CEQ 1997) and *U.S. Department of the Interior Environmental Justice Strategic Plan, 2012 – 2017* (DOI 2012). This section provides demographic information that characterizes the distribution of minority and low-income populations in the vicinity of the proposed Stateline Solar Farm Project site.

3.5.1 Environmental Setting

In identifying minority and low-income populations, the following Council on Environmental Quality (CEQ 1997) definitions of minority individuals, populations, and low-income populations were used:

Minority individuals. Individuals who identify themselves as members of the following population groups: American Indian or Alaskan Native, Asian, Native Hawaiian or Other Pacific Islander, Black, Hispanic, or two or more races.

Minority populations. Minority populations are identified where (1) the minority population of an affected area exceeds 50 percent or (2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

Low-income populations. Low-income populations in an affected area are identified with the annual statistical poverty thresholds from the Census Bureau's Current Population Reports, Series P-60, on Income and Poverty.

The "affected area" for determining environmental justice impacts for the *Proposed Action* includes the geographic area surrounding the proposed site within which adverse human health or environmental impacts could potentially be experienced. Very few people reside in the area surrounding the proposed site. One residence is located at the northeast corner of the I-15/Yates Well Road interchange on Yates Well Road, approximately 3 miles to the southeast of the proposed facility. The closest community to the proposed site is Primm, Nevada, located approximately 3 miles to the northeast of the proposed facility. Residents of Primm are primarily employees at the resorts and hotels serving the casinos and their families. The estimated 2011 population of Primm is 741, housed in apartments and mobile homes (CCDCP 2011). Accordingly, populations within 3 miles of the proposed site were evaluated for identification of minority and low-income populations.

Census block data for 2010 covering the area within 3 miles of the proposed site (the affected area) were examined (Table 3.5-1). Population was reported for only five of the approximately 60 Census blocks within this area. Zero persons were reported as living in the remaining blocks (because either no people live in the block or the number of people is so small that confidentiality of individuals would be compromised if the data were disclosed). The total 2010 population in the affected area is 340, including 26 persons within two blocks in San Bernardino County, California, and 314 in three adjacent blocks in Clark County, Nevada (in the community of Primm). Minority individuals living within the two California blocks represent 15.4 percent of the total population of those blocks, which is a smaller proportion when compared to the state (59.9 percent) or San Bernardino County (66.7 percent). Fourteen of the 25 residents in one

block are under 18 years of age and the one resident in the other block is 65 years or older. In Nevada, the minority population constitutes 82 percent of the total population of the three blocks (Primm). The community of Primm includes a higher proportion of minority individuals when compared to the state (45.9 percent) and Clark County (52.0 percent). Twenty of the 314 residents in Primm are under 18 years of age and 40 are 65 years or older.

The smallest area for which recent Census data on income are available is the tract level. Due to the very low population density in the area, the Census tracts within California (103) and Nevada (57.03 and 58.27) within 3 miles of the proposed site are very large. Census tract 103, for example, extends 90 miles or more from the proposed site. Therefore, income data are not available to determine if there are low-income populations within the affected area.

Table 3.5-1. Minority Population Within a 3-Mile Radius, 2010

	Total Population	Minority Population	Percent Minority Population
California	37,253,956	22,297,703	59.9
San Bernardino County	2,035,210	1,357,612	66.7
Census Tract 103			
Block 1224	25	4	16.0
Block 1962	1	-	0.0
Total	26	4	15.4
Nevada	2,700,551	1,238,470	45.9
Clark County	1,951,269	1,015,314	52.0
Census Tract 57.03			
Block 2173	309	255	82.5
Block 2174	4	3	75.0
Block 2185	1	-	0.0
Total	314	258	82.2
Total 3-Mile Radius	340	262	77.1

Sources: U.S. Census Board (USCB) 2012a and 2012b.

3.5.2 Applicable Regulations, Plans, and Standards

Federal

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on agencies to achieve environmental justice as part of this mission. The order requires the EPA and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

Memorandum of Understanding on Environmental Justice and Executive Order 12898 (EPA 2011) affirms that the DOI will address environmental justice with the following areas of focus: 1) implementation of the NEPA; 2) implementation of Title VI of the Civil Rights Act of 1964, as amended; 3) impacts from climate change; and 4) impacts from commercial transportation and supporting infrastructure ("goods movement").

The *applicable* CEQ *guidance* "Environmental Justice Guidance Under the National Environmental Policy Act," *suggests that* agencies should consider the composition of the affected area to determine whether minority populations or low-income populations are present in the area affected by the proposed action, and if so whether there may be disproportionately high and adverse environmental effects (CEQ 1997).

U.S. Department of the Interior Environmental Justice Strategic Plan, 2012 – 2017 (DOI 2012), which supports and compliments the DOI's stewardship responsibilities, lays out goals, strategies, and performance measures for implementation of Executive Order 12898. The five major goals include: 1) ensure awareness and implementation of the provisions of EO 12898; 2) ensure meaningful involvement for Environmental Justice (EJ) populations in the DOI decision making process; 3) identify and address environmental impacts that may disproportionately affect EJ communities: 4) use existing resources to build and sustain environmentally and economically sound communities; and 5) integrate DOI EJ strategies with its Title VI of the Civil Rights Act enforcement responsibilities.

BLM Land Use Planning Handbook, H-16010-1, Appendix D, Section IV (Environmental Justice Requirements) provides guidance for assessing potential impacts on population, housing, and employment as they relate to environmental justice. It also describes variables such as lifestyles, beliefs and attitudes, and social organizations with respect to environmental justice. These variables were not evaluated in this analysis, as they are cannot be readily quantified for the purposes of impact assessment and do not provide any additional analytical value in terms of evaluating potential environmental justice impacts.

State and Local

No State or local regulations, plans, or standards related to environmental justice would be applicable to the Proposed Action.

3.6 Lands and Realty

This section describes existing land use conditions in the Stateline Solar Farm (Proposed Action or Project) project area. Land use can be assessed by analyzing current land use activities, land ownership, zoning (where applicable), and land use designations in adopted land use plans and policies. An assessment of land use must also consider legal guarantees or limitations on land use such as those provided by easements, deeds, rights-of-way (ROWs), claims, leases, licenses, and permits. BLM-administered lands are not zoned, but they may be encumbered by easements, ROWs, mining claims, leases, and permits. Land use conditions identified in this section include: current uses of the land proposed for the project; BLM's management policies for that land, as identified in the applicable land use plan; and other existing leases, easements, claims, or permits that may be affected by the Proposed Action and alternatives. Project land use impacts are addressed in Section 4.6.

3.6.1 Environmental Setting

3.6.1.1 General Characteristics

The Proposed Action would be located entirely on BLM-administered lands in the eastern portion of San Bernardino County (see Figure 1-1). The Ivanpah Valley area comprises approximately 37,280 acres of land bounded by the Mojave National Preserve on the south and southwest, the Nevada border on the northeast. The Stateline and Mesquite Wilderness Areas are located on the northwestern boundary of Ivanpah Valley.

Existing development in Ivanpah Valley includes an interstate highway; railroads; grazing; overhead transmission lines; solar and other power facilities (both completed and under construction); subsurface pipelines, fiber-optic, and other communications lines; and active and abandoned mining and quarrying operations and associated activities.

Interstate 15, the major transportation route between Las Vegas and southern California, transects Ivanpah Valley from Primm at the Nevada border in the north to Mountain Pass on the southwest. The portion of the valley near the Nevada border includes casinos and associated hotels, restaurants, the Primm Valley Golf Course, and other tourist attractions developed on 700 acres of private land. The Union Pacific Railroad also transects the western side of the valley from the Nevada border in the north towards the town of Ivanpah in the south.

The Ivanpah Solar Electric Generating System (Ivanpah SEGS), a 370 MW solar facility using concentrated solar power tower technology, is currently under construction on approximately 3,700 acres in the western portion of Ivanpah Valley. Construction was completed in 2011 on the 618 acres, 50 MW Silver State North Solar Farm northeast of Primm on the Nevada side of the border. The NV Energy Walter Higgins Power Generating Station, a 598 MW natural gas fired power plant, and the associated Bighorn Substation are also located northeast of Primm.

The Ivanpah Dry Lake is located approximately 0.5 miles east of the project site and covers approximately 35 square miles. This area is open to non-motorized vehicles and is a popular destination for recreational activities such as land sailing, archery, and kite buggies. The area also provides diverse recreational and scenic opportunities for off-highway vehicle use.

3.6.1.2 Land Ownership/Management

The project would be located entirely on BLM-managed public land and would be under federal jurisdiction. BLM land use designations established in the CDCA Plan apply to the entire project area.

The BLM's CDCA Plan established four multiple use classes (MUCs); MUC guidelines; and plan elements for specific resources and activities such as motorized vehicle access, recreation, and vegetation harvesting. The MUCs include the following:

- Class C (Controlled), which includes areas recommended as suitable for a wilderness designation;
- Class L (Limited Use) are lands that are managed for generally lower intensity uses for the purposes of protecting sensitive natural, scenic, ecological, and cultural resource values;
- Class M (Moderate Use) provides for a wide variety of present and future uses including mining, livestock grazing, recreation, energy, and utility development; and
- Class I (Intensive Use) provides for concentrated use of lands and resources to meet human needs, where reasonable protection if provided for sensitive natural and cultural resources.

Unclassified lands consist of scattered and isolated parcels in the CDCA Plan that have not been placed within a MUC and are managed on a case-by-case basis. The entire proposed facility site is located within the "Limited Use" category of BLM's CDCA Plan.

Because the Proposed Action and alternatives would be located entirely on Federal lands, the San Bernardino County General Plan would not apply.

3.6.1.3 Existing Uses

The Proposed Action consists of 2,143 acres that are currently vacant and undeveloped desert land. The land contains habitat for native vegetation and wildlife, and is used for recreation. There are no schools, day-care facilities, convalescent centers, or hospitals within the immediate vicinity of the project study area.

The CDCA Plan includes the implementation of a network of planning corridors to meet projected utility needs, the identification of environmental constraints and siting procedures, and the identification of potential sites for geothermal development, wind energy parks, and power plants. Sixteen planning corridors were identified in the Energy Production and Utility Corridors Element of the CDCA Plan, and the Proposed Action location is situated at the convergence of two designated Utility Corridors, identified as Corridors D and BB. Numerous utilities are located within these corridors in the vicinity of the Project site. These include transmission lines operated by the Los Angeles Department of Water and Power (LADWP) and SCE, a natural gas pipeline operated by Kern River Gas Transmission, a petroleum fuels pipeline operated by Calnev, and a fiber-optic line operated by AT&T.

The Project area is currently included within the Clark Mountain Grazing Allotment. Discussion of that grazing allotment is provided in Section 3.7 of this EIS/EIR. There are no established communities on or adjacent to the project site. The project site is located adjacent to the existing Primm Valley Golf Course.

The proposed facility area includes an existing ROW (CA 21617) held by Primmadonna Company, LLC, which is for a water pipeline, access road, and power line. These lines connect two groundwater supply wells (designated WP-5 and WP-6) operated by Primm on the western edge of the Project site and run to the Primm facilities located northeast of the proposed project site. The wells supply water to the hotels and casinos at Primm, and to the NV Energy Walter Higgins Power Generating Station.

The Project area also includes three routes of travel designated by BLM as open routes. These routes include route 699226 (1.4 miles encompassed by the Proposed Action), 699198 (2.0 miles), and 699238 (1.4 miles).

The Project site is not located within an airport land use plan or within two miles of a public or private use airport.

3.6.2 Applicable Regulations, Plan, and Standards

3.6.2.1 Federal

Federal Land Policy and Management Act (FLPMA) of 1976

The FLPMA establishes public land policy; guidelines for administration; and provides for the management, protection, development, and enhancement of public lands. FLPMA Title V, Section 501, establishes BLM's authority to grant ROWs for generation, transmission, and distribution of electrical energy (FLPMA, as amended, 2001). BLM is responsible for responding to requests regarding the development of energy resources on BLM-administered lands in a manner that balances diverse resource uses and takes into account the long-term needs for renewable and non-renewable resources for future generations.

California Desert Conservation Area Plan

The CDCA encompasses 25 million acres in southern California designated by Congress in 1976 through the FLPMA. The BLM manages approximately 10 million of those acres. Congress directed the BLM to prepare and implement a comprehensive long-range plan for the management, use, development, and protection of public lands within the CDCA. The CDCA Plan, as amended, is based on the concepts of multiple-use, sustained yield, and maintenance of environmental quality. The CDCA Plan provides overall regional guidance for BLM-administered lands in the CDCA and establishes long-term goals for protection and use of the California desert. The CDCA Plan establishes four MUCs; MUC guidelines; and plan elements for specific resources or activities such as motorized vehicle access, recreation, and vegetation within each MUC.

3.6.2.2 State and Local

Because the Proposed Action would be located entirely on federal lands, no state or local land use plans would apply.

3.7 Livestock Grazing

Livestock grazing has historically been, and continues to be, a significant use of renewable resources on public land in the California desert. The FLPMA, Taylor Grazing Act, and the Public Rangelands Improvement Act of 1978 recognize livestock grazing as a principal use for the production of food and fiber (BLM 1980).

Under the CDCA Plan, 4.5 million acres (36 percent of public lands in the CDCA) in 54 grazing allotments are available for grazing. The CDCA Plan prescribes the area and the amount of forage in animal unit months (AUMs) *available in* each allotment. An AUM is a measure of forage that sustains one cow/calf pair for one month. Allotments with perennial forage have an established limit of forage based on the quality and quantity of perennial plants and are permitted in AUMs for a defined period of grazing use. Perennial forage use is typically authorized to be consumed at the same level from year-to-year unless forage production does not meet seasonal norms.

3.7.1 Environmental Setting

The entire Project Study Area for the Stateline Solar Farm Project is located within the 104,464 ac Clark Mountain Grazing Allotment (Allotment #09003); 97,847 ac of which are on BLM-managed public lands. The Clark Mountain Allotment is located in the Clark Mountain, Sandy Valley, and Mesquite Dry Lake geographic areas. It is an ephemeral and perennial allotment with potential forage production to enable the BLM to authorize cattle grazing on ephemeral forage when it meets threshold criteria. The elevation within the allotment ranges from 200 feet to over 5,000 feet above mean sea level (asl). The dominant vegetation communities are the creosote-white bursage, mesquite bosque and big galleta series. The vegetation communities within the proposed 2,143 acre solar facility site produce small amounts of livestock forage relative to more productive plant communities found on higher elevation areas elsewhere within the allotment. These higher elevations produce the majority of the forage *available for grazing*. Below 3,500 feet in elevation, forage production is best described as ephemeral rangeland. *The term* ephemeral rangelands *describes* the Hot Desert Biome regions that do not consistently produce enough forage to sustain a livestock operation but may briefly produce unusual volumes of forage to accommodate livestock grazing.

The current Clark Mountain Grazing Allotment lease was authorized in *2012*, and *expires* in *2022*. The acreage, AUMs, and number of cattle associated with the lease as originally issued (and currently renewed) are shown in Table 3.7-1 below.

Table 3.7-1. Allotment Land Ownership and Stocking Rates in *2012* Lease

Acreage	Public	*97,560* ac
	Private	1,023 ac
	State	5,594 ac
	Total	***104,177* ac**
Cattle Number*		*156*
AUMs**		*1,498*
Season of Grazing Use***		March 1 to February 28

* The number of cattle authorized to graze during the season of use.
** AUM - the amount of forage necessary for the sustenance of one cow or its equivalent for a period of 1 month.
*** The period livestock typically graze forage on the allotment.

3.7.2 Applicable Regulations, Plan, and Standards

Laws that apply to the BLM's management of public lands grazing include:

- The Taylor Grazing Act of June 28, 1934 as amended (43 U.S.C. 315, 315a through 315r).
- The FLPMA (43 U.S.C. 1701 et seq.) as amended by the Public Rangelands Improvement Act of 1978 (43 U.S.C. 1901 et seq.).
- The Public Rangelands Improvement Act of 1978 (43 U.S.C. 1901 et seq.).
- Various public land orders, executive orders, and agreements that authorize the Secretary to administer livestock grazing on specified lands under the Taylor Grazing Act or other authority as specified.
- Endangered Species Act (ESA) of 1973 as amended.
- 43 CFR 4100 Grazing Administration – Excluding Alaska
- Section 106 of the National Historic Preservation Act of 1966 (as amended)

In addition, the CDCA Plan and NEMO Plan amendments provide guidelines for BLM's management of grazing within the CDCA. The NEMO Plan amendments to the CDCA establish standards and guidelines for grazing activities in the NEMO Planning Area, of which the Clark Mountain Grazing Allotment is a part.

3.8 Mineral Resources

This section presents a discussion of mineral resources that could be destroyed or otherwise made unavailable due to implementation of proposed Stateline Solar Farm project or alternatives. Baseline geologic data was collected from the U.S. Geological Survey (USGS 1985), the California Division of Mines and Geology (CDMG), the Natural Resources Conservation Service, the BLM, the California Department of Conservation (CDOC), the County of San Bernardino, the Applicant, and the Phase 1 Geotechnical Reconnaissance Report prepared for the Applicant. The study area addressed in this section includes lands that may be affected directly and/or indirectly by construction, operation, and decommissioning of the proposed Stateline Solar Farm project.

3.8.1 Environmental Setting

BLM has reviewed applicable geologic maps and reports for this area. The Stateline Solar Farm Project site occurs within the Ivanpah mining district (CDMG 2005). Under the California State Surface Mining and Reclamation Act of 1975, Mineral Resource Zones (MRZs) are defined by the State Geologist to classify land according its level of significance as a mineral resource. MRZs are used to help identify and protect state mineral resources from urban expansion or other irreversible land uses that might preclude mineral extraction. The project site is mapped as Mineral Resource Zone 4; the geologic information that is available in this area "does not rule out either the presence or absence of mineral resources" for all types of mineral resources including rare earth elements, hydrothermal mineralization, and industrial minerals (CDMG 1987). The carbonate bedrock outcrops west and north of the project site are classified as Mineral Resource Zone 3a, which is an "area underlain by geologic terranes within which undiscovered industrial mineral resources similar to known deposits in the same producing district or region may reasonably expected to exist (hypothetical resources). Such areas may include prospects of undetermined significance" (CDMG 1987). These carbonate rocks could be encountered at shallow depths beneath the solar farm site. Limestone would be the primary mineral resource potentially present.

The BLM groups minerals on federal lands into three distinct categories: (1) Locatable resources (subject to the General Mining Law of 1872, as amended); (2) Leasable resources (subject to various Mineral Leasing Acts); and (3) Salable resources (subject to mineral materials disposed of under the Materials Act of 1947, as amended) (BLM 2010). Locatable minerals include hardrock resources that are typically metals with a unique or special use, such as gold and silver. Leasable minerals include those which are typically found in bedded deposits, such as oil, gas, and geothermal resources. Salable minerals include common variety of materials such as sand, stone, and gravel. Local BLM Field Offices are responsible for the management of mineral materials on public lands; for lands in the vicinity of the proposed Stateline facility, the Needles Field Office has this responsibility.

There are no active mining operations within the solar farm project boundaries or in the immediate surroundings. The closest current mining operation is the Molycorp Minerals, LLC rare earth minerals mine and processing facility located at Mountain Pass, approximately 8 miles to the west of the proposed location. Other mining operations that have occurred in the local area in the past include the Colosseum Mine, in the Clark Mountain Mining District, several miles west of the proposed location. The Colosseum Mine produced gold from 1988 to 1993 (EPA 1993). Within the Ivanpah mining district, mineral production includes gold, silver, barite, copper, fluorspar, rare earth elements, tungsten, tin, boron, hectorite, bentonite, gypsum, talc, zeolites, sodium, limestone, sand, gravel, stone, and turquoise (CDMG 1987; CDMG 2005)

There are two abandoned mines located within the vicinity of the solar farm project site; the Umberci Mine is approximately 3.8 miles and the Kally Mine is approximately 4.7 miles to the northwest of the project site. A small amount of lead and zinc was mined from the Kally and Umberci Mines. Gypsum was mined from the Shire Gypsum Mine located adjacent to the Kally Mine.

The proposed location is sited on alluvial fan materials. The general area is potentially leasable, and there has been limited exploration for oil and gas. However, there has been no production, and the area is considered to have low potential for leasable minerals. The solar farm project site is located in Geothermal District 2, however the nearest oil and gas fields are located roughly 100 miles southwest of the project site (CDOC 2001). Some dry lake beds in California are sources of brine and salt production, but Ivanpah Dry Lake is not expected to be a potential resource for these materials.

The presence of alluvial fan materials on the proposed location means that the property could potentially be accessed as a source of salable sand and gravel resources. During construction, the Applicant may need or desire to move sand and gravel either offsite, or between the different units of the facility. Should this occur, the applicant would be required to comply with BLM regulations in at 43 CFR Part 3600, which regulates the production and use of sand and gravel from public lands. Use of sand and gravel or other mineral materials within the boundaries of an authorized ROW is permitted; however, removal of these materials from an authorized ROW would require payment to the U.S. of the fair market value of those materials.

There are no known currently active economic commercial operations on or immediately adjacent to the project site. The proposed site is currently not used for mineral production, nor is it under claim, lease, or permit for the production of locatable, leasable, or salable minerals. As the proposed site has not been withdrawn from the Mineral Leasing or Materials Sales Acts, it is possible that mineral resources could be identified and claimed beneath the project site prior to issuance of the ROW grant. In such a case there would be a potential conflict. However, the potential for this scenario is expected to be low. If it did occur, conflicts between the surface use of the land for solar energy production and access to the subsurface minerals would be addressed in accordance with appropriate regulations.

Sand and gravel resources are present at the site; however, such materials are present throughout the regional area and therefore the Stateline Solar Farm should not have an adverse impact on the availability of these resources. Following decommissioning of the project, the sand and gravel resources present at the project site would again become available. In addition, only limited exploration for oil and gas resources has been performed in the area, and no active oil or gas operations are located in the immediate vicinity of the project. As a result, the Stateline Solar Farm project would not impact any current or reasonably foreseeable development of geologic or mineral resources.

3.8.2 Applicable Regulations, Plan, and Standards

3.8.2.1 Federal

General Mining Law of 1872. Declared all valuable mineral deposits in lands belonging to the United States to be free and open to exploration and purchase. This law remains the method for disposal of minerals in Federal lands that are not specifically provided for in later mineral leasing and sales laws.

Materials Act of July 31, 1947. Authorizes the sale of certain materials, including sand, stone, gravel, and common clay from public lands, if not otherwise expressly authorized or prohibited by law.

Surface Resources Act of 1955. Defined common varieties of sand, stone, gravel, and other materials and authorized the Government to manage and dispose of any land and surface resources that are not incident to mining on unpatented mining claims.

Mining Claims Rights Restoration Act of August 11, 1955. Permits the mining, development, and utilization of mineral resources on all public lands withdrawn or reserved for power development.

Mining and Mineral Policy Act of 1970. This act declared that the federal government policy is to encourage private enterprise in the development of a sound and stable domestic mineral industry and in orderly and economic development of mineral resources, research, and reclamation methods.

California Desert Conservation Area Plan (CDCA). The CDCA Plan defines multiple-use classes for BLM-managed lands within the CDCA, which includes land area encompassing the proposed Stateline site. With respect to geological resources, the CDCA Plan aims to maintain the availability of mineral resources on public lands for exploration and development.

3.8.2.2 State

State Surface Mining and Reclamation Act (SMARA) of 1975. The SMARA mandated the initiation by the State Geologist of mineral land classification in order to help identify and protect mineral resources in areas within the State subject to urban expansion or other irreversible land uses which would preclude mineral extraction. SMARA also allowed the State Mining and Geology Board (SMGB), after receiving classification information from the State Geologist, to designate lands containing mineral deposits of regional or statewide significance. Mineral lands are mapped according to jurisdictional boundaries (i.e., counties), mapping all mineral commodities at one time in the area, using the California Mineral Land Classification System. (CDOC 2000).

The objective of classification and designation processes is to ensure, through appropriate lead agency policies and procedures, that mineral deposits of statewide or of regional significance are available when needed. The SMGB, based on recommendations from the State Geologist and public input, prioritizes areas to be classified and/or designated. Areas which are generally given highest priority are those areas within the State which are subject to urban expansion or other irreversible land uses which would preclude mineral extraction. (CDOC 2000).

Classification is completed by the State Geologist in accordance with the SMGB's priority list, into MRZs, as defined below. Classification of these areas is based on geologic and economic factors without regard to existing land use and land ownership. The following MRZ categories are used by the State Geologist in classifying the State's lands:

- **MRZ-1**—Areas where adequate geologic information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence. This zone is applied where well developed lines of reasoning, based on economic-geologic principles and adequate data, indicate that the likelihood for occurrence of significant mineral deposits is nil or slight.
- **MRZ-2a**—Areas underlain by mineral deposits where geologic data show that significant measured or indicated resources are present. Areas classified MRZ-2a contain discovered mineral deposits that are either measured or indicated reserves as determined by such evidence as drilling records, sample analysis, surface exposure, and

mine information. Land included in the MRZ-2a category is of prime importance because it contains known economic mineral deposits.

- **MRZ-2b**—Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present. Areas classified MRZ-2b contain discovered deposits that are either inferred reserves or deposits that are presently sub-economic as determined by limited sample analysis, exposure, and past mining history.
- **MRZ-3a**—Areas containing known mineral deposits that may qualify as mineral resources. Further exploration work within these areas could result in the reclassification of specific localities into the MRZ-2a or MRZ-2b categories. MRZ-3a areas are considered to have a moderate potential for the discovery of economic mineral deposits.
- **MRZ-3b**—Areas containing inferred mineral deposits that may qualify as mineral resources. Land classified MRZ- 3b represents areas in geologic settings which appear to be favorable environments for the occurrence of specific mineral deposits. MRZ-3b is applied to land where geologic evidence leads to the conclusion that it is plausible that economic mineral deposits are present.
- **MRZ-4**—Areas where geologic information does not rule out either the presence or absence of mineral resources. It must be emphasized that MRZ-4 classification does not imply that there is little likelihood for the presence of mineral resources, but rather there is a lack of knowledge regarding mineral occurrence.

If new information becomes available for a MRZ, such as through sampling or mining exploration, re-classification of that MRZ can occur. For example, a MRZ-4 classification could be re-classified to any of the other MRZ classifications. (CDOC 2000).

3.8.2.3 Local

California Surface Mining and Reclamation Act. San Bernardino County is the lead agency for SMARA within the County, and issues permits and regulates salable mineral operations.

3.9 Noise

This section describes the existing ambient noise conditions and applicable laws and regulations for the area where the Proposed Action and its alternatives are located.

Section 3.9.1 presents the environmental setting for the Stateline Solar Farm Project relevant to noise and vibration, including general information about noise and vibration fundamentals, and Section 3.9.2 presents the regulatory setting. Section 4.9 presents the noise and vibration impacts of the Proposed Action and its alternatives, including noise and vibration during construction activities, operation, and decommissioning of the facility. *Section 4.9 also* lists mitigation measures that would minimize *those* impacts to the extent feasible.

3.9.1 Environmental Setting

General Information on Noise

Noise is defined as unwanted sound. Noise can be described in terms of three variables: amplitude (loud or soft), frequency (pitch), and time pattern (variability), and its potential effects can be described in terms of a noise generating source, a propagation path, and a receiver (FTA 2006). The ambient sound level of a region is defined by the total noise generated within the specific environment and is usually composed of sound emanating from natural sources (birds, leaves, etc.) and from human activities (yard maintenance, vehicles, talking, etc.). Ambient sound levels vary with time of day, wind speed and direction, and level of human activity. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Excessive noise exposure has been shown to cause interference with human activities at home, work, or recreation; community annoyance, hearing loss, and affect people's health and well-being. Even though hearing loss is the most clearly measurable health hazard, noise is also linked to other psychological, sociological, physiological, and economical effects, either temporary or permanent (EPA 1974). Potential human annoyance and health effects associated with noise may vary depending on factors such as: (1) the difference between the new noise and the existing ambient noise levels; (2) the presence of tonal noise, noticeable or discrete continuous sounds, such as hums, hisses, screeches, or drones; (3) low frequency noise (frequency range of 8 to 1,000 Hertz [Hz]); (4) intermittent or periodic sounds, such as a single vehicle passing by, backup alarms, or machinery that operates in cycles; and (5) impulsive sounds from impacts or explosions (Brüel and Kjaer 2000). In some cases, noise can also disrupt the normal behavior of wildlife. Although the severity of the effects varies depending on the species being studied and other conditions, research has found that wildlife can suffer adverse physiological and behavioral changes from intrusive sounds and other human disturbances (NPS 2012).

To describe environmental noise and to assess impacts on areas sensitive to community noise, a frequency weighting measure that simulates human perception is customarily used. The frequency weighting scale known as A-weighting best reflects the human ear's reduced sensitivity to low frequencies and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. In general, a difference of more than 3 dBA is a perceptible change in environmental noise, while a 5 dBA difference typically causes a change in community reaction. An increase of 10 dBA is perceived by people as a doubling of loudness, and almost certainly causes an adverse community response. Noise containing discrete tones (tonal noise) is much more noticeable and more annoying at the same relative loudness level than other types of noise, because it stands out against background noise (BLM 2005).

People experience a wide range of sounds in the environment. Table 3.9-1 shows the relative A-weighted noise levels of common sounds measured in the environment and industry for

various sound levels. Excessive noise cannot only be undesirable but may also cause physical and/or psychological damage. The amount of annoyance or damage caused by noise is dependent primarily upon the amount and nature of the noise, the amount of ambient noise present before the intruding noise, and the activity of the person working or living in the area. Environmental and community noise levels rarely are of sufficient intensity to cause irreversible hearing damage, but disruptive environmental noise can interfere with speech and other communication and be a major source of annoyance by disturbing sleep, rest, and relaxation.

Table 3.9-1. Typical Sound Levels Measured in the Environment and Industry

Noise source at a given distance	A-Weighted Sound Level (dBA)	Noise Environments	Qualitative Description
Carrier deck jet operation	140	Carrier flight deck	Painfully loud
Civil defense siren (100 feet)	130		
Jet takeoff (200 feet)	120		Threshold of pain
Loud rock music	110	Rock music concert	
Pile driver (50 feet)	100		Very loud / very annoying
Ambulance siren (100 feet)	90	Boiler room	
Pneumatic drill (50 feet)	80	Noisy restaurant	Annoying
Freeway traffic (50 feet)	70		Intrusive / Moderately loud
Air conditioning unit (20 feet)	60	Data processing center	
Light auto traffic (100 feet); rainfall	50	Private business office	
Bird calls	40	Average living room library	Quiet
Soft whisper (5 feet); rustling leaves	30	Quiet bedroom	Very Quiet
Broadcasting/Recording studio	20		
Normal breathing	10		Threshold of hearing

Source: California Energy Commission 2008

Decibels are logarithmic units that conveniently compare the wide range of sound intensities to which the human ear is sensitive. Therefore, the cumulative noise level from two or more sources will combine logarithmically, rather than linearly (i.e., simple addition). For example, if two identical noise sources produce a noise level of 50 dBA each, the combined noise level would be 53 dBA, not 100 dBA.

Sound is generally propagated by spherical spreading according to the “inverse square law”. For noise, the sound energy decreases with the square of the distance. As such, the sound pressure level would be reduced by 6 decibels (dB) per doubling of distance from a ground-level stationary or point source. For a noise source which is relatively long, such as a constant stream of highway traffic (line source), the sound pressure spreads at a rate of 3 dB per doubling of distance. The drop-off rate also varies with both terrain conditions and the presence of obstructions in the sound propagation path. At very large distances, beyond several hundred feet, wind and temperature gradients influence sound propagation. Changes in noise levels due to wind are generally short-term without persistent directional winds, where some hours may be a decibel or two louder than others within the margin of precision of such an assessment.

The predominant rating scales for noise impacts to human communities in the State of California are the equivalent continuous sound level (L_{eq}) and Community Noise Equivalent Level (CNEL) based on dBA. L_{eq} is the total sound energy of time-varying noise over a sample period. CNEL is the time-varying noise over a 24-hour period, with a weighting factor of 5 dBA applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and with a weighting factor of 10 dBA from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). The noise adjustments are added to the ambient noise levels occurring during the more sensitive hours. Day-night average noise (L_{dn}) is similar to the CNEL but without the adjustment for nighttime noise events. CNEL and L_{dn} are normally exchangeable and within 1 dB of each other. Other noise-rating scales used to assess an annoyance factor include the maximum instantaneous noise level, or L_{max}, and percentile noise exceedance levels, or LN. L_{max} is the highest exponential time-averaged sound level that occurs during a stated time period. It reflects peak operating conditions and addresses the annoying aspects of intermittent noise. LN is the noise level that is exceeded “N” percent of the time during a specified time period. For example, the L10 noise level represents the noise level exceeded 10 percent of the time during a stated period. The L90 noise level represents the noise level exceeded 90 percent of the time and is considered the lowest noise level experienced during a monitoring period. It is normally referred to as the background noise level.

Community noise levels are closely related to the intensity of human activity and land use. Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. In wilderness areas, the L_{dn} noise levels can be below 35 dBA. In small towns or wooded and lightly used residential areas, the L_{dn} is more likely to be around 50 or 60 dBA. Levels around 75 dBA are more common in busy urban areas (e.g., downtown Los Angeles), and levels up to 85 dBA occur near major freeways and airports. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, they nevertheless are considered to be adverse to public health.

The surrounding land uses dictate what noise levels would be considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than what would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are about seven decibels lower than the corresponding daytime levels. In rural areas away from roads and other human activity, the day-to-night difference can be considerably less. Areas with full-time human occupation that are subject to nighttime noise are often considered objectionable because of the likelihood of disrupting sleep. Noise levels above 45 dBA at night can result in the onset of sleep interference effects. At 70 dBA, sleep interference effects become considerable (EPA 1974).

Noise Sensitive Land Uses. Some land uses are considered more sensitive to ambient noise levels than others due to the types of activities typically involved. Residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, auditoriums, natural areas, parks, and outdoor recreation areas are generally more sensitive to noise than are commercial and industrial land uses. Consequently, the noise standards for sensitive land uses are more stringent than those for less sensitive uses, such as commercial and industrial.

Certain human activities and sensitive land uses (e.g., residences, schools, and hospitals) generally require lower noise levels. An exterior noise level of L_{dn} 55 to 60 dB is the upper limit for speech communication to occur inside a typical home. In addition, social surveys and case studies have shown that complaints and community annoyance in residential areas begin to occur at L_{dn} 55 dB (SCAG 2003).

General Information on Vibration

Vibration is a phenomenon related to noise, where common sources include trains, buses on rough roads, and construction activities such as blasting, pile-driving, and operating heavy earth-moving equipment (FTA 2006). Vibration is an oscillatory motion through a solid medium, in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the affect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration. Table 3.9-2 shows human reactions to typical vibration levels.

Table 3.9-2. Human Reaction to Typical Vibration Levels

Vibration Level Peak Particle Velocity (inches/second)	Human reaction
0.0059 – 0.0188	Threshold of perception, possibility of intrusion
0.0787	Vibrations readily perceptible
0.0984	Continuous vibration begins to annoy people
0.1968	Vibrations annoying to people in buildings
0.3937 – 0.5905	Vibrations considered unpleasant when continuously subjected

Source: City of Fontana 2003

San Bernardino County's Development Code, General Performance Standards, specifies a vibration standard of 0.2 inches per second for development projects. The General Performance Standards have an exemption from this standard for temporary construction, maintenance, repair, or demolition activities occurring between 7:00 am and 7:00 pm except Sundays and federal holidays.

Vibration Sensitive Land Uses. Several land uses are sensitive to vibrations, and include hospitals, libraries, residential areas, schools, and churches; in particular, vibration-sensitive uses include research and manufacturing where vibration-sensitive equipment is used (e.g., electron microscopes and high resolution lithographic equipment), concert halls, TV recording studios, theaters, as well as cultural and historic resources.

The groundborne energy of vibration has the potential to cause structural damage and annoyance; it can be felt outdoors, but the perceived intensity of vibration effects are much greater indoors due to the shaking of structures. For residential uses, the background vibration velocity level is usually 50 VdB or lower, which is well below the 65 VdB threshold of perception for humans (FTA 2006). Although the perceptibility threshold is 65 VdB, human response to vibration is not usually significant unless the vibration exceeds 70 VdB (FTA 2006). Rapid transit or light rail systems typically generate vibration levels of 70 VdB or more near their tracks; however, buses and trucks rarely create vibration that exceeds 70 VdB unless there are bumps in the road (FTA 2006). If there is unusually rough road or track, wheel flats, geologic conditions that promote efficient propagation of vibration, or vehicles with very stiff suspension systems, the vibration levels from any source can be 10 decibels higher than typical (FTA 2006). Ground vibrations from construction activities do not often reach the levels that can damage structures, but they can achieve the audible and feelable ranges in buildings very close to the source of the vibration. Typically, groundborne vibration generated by heavy equipment or traffic on rough

roads attenuates rapidly with distance from the source of the vibration so that potential impact areas are usually confined within short distances (i.e., 200 feet or less) from the source (FTA 2006).

3.9.1.1 Regional Setting

The Project study area is located in the Ivanpah Valley, along the western flank of the Ivanpah Dry Lake in the Mojave Desert in eastern San Bernardino County, California. The project area is located approximately 2 miles south of the California-Nevada border and 0.5 miles west of Interstate 15 (I-15) in eastern San Bernardino County, California. Regional access to the Project study area is provided via I-15.

3.9.1.2 Project Setting

The project study area is comprised of largely vacant, undeveloped, and relatively flat land. The project study area covers approximately 5,850 acres of Federal land managed by the BLM. The Primm Valley Golf Club is adjacent to the southeast corner of the project study area. The Golf Club is accessed via the Yates Well Road exit from I-15, which is also the southern access for the project study area.

Sensitive Receptors. There are no schools or churches in or near the project study area. The closest residence is located at the northeast corner of the intersection of I-15 and Yates Well Road, approximately 2 miles east of the project study area and approximately 250 feet from a potential project construction haul route. The hotels in Primm, Nevada, are located approximately 1.5 miles to the northeast. The Primm Valley Golf Club is located adjacent to the southeast of the project study area along I-15. The Primm Valley Golf Club golf course is considered a less noise-sensitive land use than the residence and hotels.

Existing Ambient Noise Conditions. The project study area is located in a rural environment, with limited surrounding development. The primary existing noise source in the project study area is traffic along I-15. Noise from motor vehicles is generated by engine vibrations, the interaction between the tires and the road, and the vehicle exhaust systems. The noise levels associated with roadways vary with total traffic volume, vehicular speed, the relative numbers of trucks and cars in the traffic volumes, the roadway cross-section and geometric design, and the local topography. Typically, the greater the vehicle speed and truck percentage, the greater the level of noise emission from the transportation facility (San Bernardino General Plan 2007).

Airports in the project area also incrementally contribute to existing ambient noise. Aircraft noise generates occasional, but intrusive noise levels for the occupants of property adjacent to airports and/or under the flight patterns of aircraft using airports (San Bernardino General Plan 2007). The nearest airport to the project area is Jean Airport, located about 15 miles north in Jean, Nevada. McCarran International Airport is located approximately 40 miles northeast of the site in Las Vegas, Nevada. The closest airport in San Bernardino County is the Barstow-Daggett Airport, approximately 100 miles south of the project area. A new commercial airport, the Southern Nevada Supplemental Airport, has been proposed between Jean and Primm, Nevada, and would be approximately 5 miles north of the project study area.

Ambient Noise Monitoring. A 24-hour ambient noise survey was conducted on November 20 to 21, 2008, at the Primm Valley Golf Course, in order to assess the existing ambient noise

levels (Table 3.9-3). The noise survey was conducted as part of the EIR/EIS prepared for the Ivanpah SEGS, a 370 MW solar thermal power facility. The Ivanpah SEGS project is currently being constructed immediately south and west of the project study area.

The noise survey was conducted using a continuous unattended long-term monitoring station. Weather conditions during the survey, as measured in Henderson, Nevada, consisted of clear skies, wind speeds between 4 and 10 miles per hour, temperatures between 45 and 72°F, and relative humidity between 15 and 37 percent. A Larson Davis 820 Type 1 (precision) sound level meter was used. The meter was factory calibrated within the previous 12 months and was field calibrated prior to and after each measurement series with a Larson Davis CAL200 field calibrator. A microphone was attached to tripods at a height of approximately 5 feet. A Shroud and windscreen were used to protect the microphone from moisture and wind.

Table 3.9-3. Noise Survey Results

Noise Monitoring Location	Description	Primary Noise Source	Monitoring Period	L_{dn}	L_{eq} (24 hour)	Max Hourly (L_{eq})	Min Hourly (L_{eq})
Primm Valley Golf Club	Rural	I-15, golf course activities	24 hours	62	55	58	45

Source: BLM 2010, Ivanpah Solar Electric Generating System EIS, November 2010

Since the noise survey was conducted, construction of the Ivanpah SEGS has commenced. Construction of the Ivanpah SEGS project began in October 2010 and it is anticipated that construction will continue through 2013. Construction of the Ivanpah SEGS project involves operation of construction equipment on the project site and vehicle trips on I-15 associated with construction workers commuting to the site and the delivery of equipment and materials. As a result of the current Ivanpah SEGS construction activities, the existing ambient noise levels in the project study area are anticipated to be incrementally higher than the noise survey results presented in Table 3.9-3.

3.9.2 Applicable Regulations, Plan, and Standards

Ambient noise standards are maintained at the Federal, state, and local levels. In 1974, the EPA published "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety" (USEPA 550/9-74-004). This document provides information for state and local agencies to use in developing their ambient noise standards to assist state and local government entities in development of state and local ordinances, regulations, and standards for noise (Department of State 2007).

3.9.2.1 Federal

There are no Federal noise regulations. *However,* noise and land use guidelines have been produced by a number of federal agencies including the Federal Highway Administration, the EPA, the Department of Housing and Urban Development, and the American National Standards Institute. These guidelines are all based upon statistical noise criteria such as L_{eq}, L_{dn} or CNEL*, and provide guidelines for assessing the noise impacts of the Project*.

The EPA "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety" identified outdoor and indoor noise levels to protect public health and assets (Table 3.9-4). A $L_{eq\ (24)}$ of 70 dB was identified as the level of environmental noise that would prevent any measurable hearing loss over a lifetime. An L_{dn} of

55 dBA outdoors and 45 dBA indoors were identified as noise thresholds that would prevent activity interference or annoyance (Department of State 2007).

Table 3.9-4. EPA Noise Control Guidelines

Use	Measure	Indoor activity interference (dBA)	Hearing loss consideration (dBA) (b)	To protect against both effects (c) (dBA)	Outdoor activity interference (dBA)	Hearing Loss consideration (dBA) (b)	To protect against both effects (c) (dBA)
Residential with Outside Space	L_{dn} $L_{eq(24)}$	45	70	45	55	70	55
Residential with No Outside Space	L_{dn} $L_{eq(24)}$	45	70	45			
Commercial	$L_{eq(24)}$	(a)	70	70(d)	(a)	70	70(d)
Inside Transportation	$L_{eq(24)}$	(a)	70	(a)			
Industrial	$L_{eq(24)}$	(a)	70	70(d)	(a)	70	70(d)
Hospitals	L_{dn} $L_{eq(24)}$	45	70	45	55	70	55
Educational	L_{dn} $L_{eq(24)}$	45	70	45	55	70	55
Recreational Area	$L_{eq(24)}$	(a)	70	70(d)	(a)	70	70(d)
Farm Land and General Unpopulated Land	$L_{eq(24)}$				(a)	70	70(d)

Source: City of Rialto 1992

Notes:

(a) Since different types of activities appear to be associated with different levels, identification of a maximum level for activity interference may be difficult except in those circumstances where speech communication is a critical activity.

(b) Level of hearing loss is defined as the exposure period which results in hearing loss at the identified level is a period of 40 years.

(c) Based on lowest level

(d) Based on hearing loss
A L_{eq} of 75 dBA during 8 hours may be identified in these situations so long as the exposure over the remaining 16 hours per day is low enough to result in a negligible contribution to the 24-hour average.

The only guidance available for evaluation of vibration is published by the Federal Transit Administration (FTA) for assessing the impacts of groundborne vibration associated with construction of rail projects. These guidelines have been applied by other jurisdictions to assess groundborne vibration of other types of projects. The FTA-recommended vibration standards are expressed in terms of the "vibration level," which is calculated from the peak particle velocity measured from groundborne vibration. The FTA measure of the threshold of perception is 65 VdB,[1] which correlates to a peak particle velocity of about 0.002 inches per second (in/sec). The FTA measure of the threshold of architectural damage for conventional sensitive structures is 100 VdB, which correlates to a peak particle velocity of about 0.2 in/sec.

[1] VdB is a common measure of vibration energy.

3.9.2.2 State

California Government Code section 65302(f) encourages each local governmental entity to perform noise studies and implement a noise element as part of its General Plan. In addition, the California Office of Planning and Research has published guidelines for preparing noise elements, which include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure.

The California Department of Health Services has established the Office of Noise Control, which has prepared studies associated with noise levels and their effects on various land uses. Based upon these studies, the State has established interior and exterior noise standards by land use category and standards for the compatibility of various land uses and noise levels (Table 3.9-5). In addition, noise limits for highway vehicles are regulated under the California Vehicle Code, §§23130 and 23130.5. The limits are enforceable on the highways by the California Highway Patrol and the County Sheriff's Office.

Table 3.9-5. Noise/Land Use Compatibility Matrix for Community Noise Environments

Land Use Category	Community Noise Exposure Level (CNEL, dBA)						
	50	55	60	65	70	75	80
Residential – Low density single-family, duplex, and mobile homes							
Residential – Multi-family							
Transient Lodging – Hotels, motels							
Schools, Libraries, Churches, Hospitals, Nursing homes							
Auditoriums, Concert halls, Amphitheaters							
Sport arenas, Outdoor spectator sports, amusement parks							
Playgrounds, neighborhood parks							
Golf courses, riding stables, Cemeteries							
Office and Professional Buildings, Retail Commercial, Banks, Restaurants							
Industrial, Manufacturing, Utilities, Service Stations, Warehousing, Agriculture							

Table 3.9-5. Noise/Land Use Compatibility Matrix for Community Noise Environments

Land Use Category	Community Noise Exposure Level (CNEL, dBA)					

Source: State of California Office of Noise Control, Department of Health Services 1976

Normally acceptable: Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Conditionally acceptable: New construction or development should be undertaken only after a detailed analysis of the noise requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air systems or air conditioning, normally suffices.

Normally unacceptable: New construction or development should generally be discouraged. If it does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly unacceptable: New construction or development should generally not be undertaken.

3.9.2.3 San Bernardino County

The Noise Element of the County of San Bernardino General Plan (2007) states that noise levels shall not exceed performance standards listed in Chapter 83.01 of the County Development Code at the boundary of areas planned or zoned for residential or other noise-sensitive land uses. Performance standards are also identified in Chapter 83.01 of the County Development Code (Table 3.9-6).

Table 3.9-6. Noise Standards for Stationary Noise Sources, San Bernardino County

Affected Land Uses (Receiving Noise)	7 am – 10 pm L_{eq} (dBA)	10 pm – 7 am L_{eq} (dBA)
Residential	55	45
Professional Services	55	55
Other Commercial	60	60
Industrial	70	70

Source: County of San Bernardino 2007b

The above limits are adjusted as follows for short-term noise events:

- The noise standard plus 5 dBA for a cumulative period of more than 15 minutes in any hour.
- The noise standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour.
- The noise standard plus 15 dBA for a cumulative period of more than 1 minute in any hour.
- The noise standard plus 20 dBA for any period of time.

If the noise consists entirely of impact noise or simple tone noise, the allowable level shall be reduced by 5 dBA.

Temporary construction, maintenance, repair, or demolition activities conducted between the hours of 7:00 a.m. and 7:00 p.m., except Sundays and federal holidays, are exempt from the above limits (COSB 2007a, § 83.01.080[g][3]).

Vibration is limited to that which cannot be felt without the aid of instruments at or beyond the lot line, and that which does not produce a particle velocity greater than or equal to 0.2 in/sec at the

lot line (COSB 2007a, § 83.01.090[a]). Construction vibration is exempt from this limit between the hours of 7:00 a.m. and 7:00 p.m. except Sundays and federal holidays (COSB 2007a, § 83.01.090[c][2]).

Note that, since the project will be built on Federally owned land, these San Bernardino County laws and regulations do not apply. They are listed here solely as guidelines *to evaluate the impacts of the noise generated by the Project*.

3.10 Paleontology

Paleontological resources are the fossilized remains of deceased and most commonly of extinct organisms. Such resources provide direct evidence of ancient life. Because such fossils cannot be replaced once they are damaged or destroyed, paleontological resources are considered non-renewable resources. In accordance with existing BLM policy and for the purposes of this analysis, paleontological resources are defined as "any fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth" (16 U.S.C. 470aaa(4)).

Ground disturbing activities have the potential to cause direct, indirect, and cumulative adverse impacts on paleontological resources. Direct impacts may include breakage and fragmentation on fossils in both unconsolidated sedimentary deposits and underlying rock units. Indirect impacts may result from exposure of, or increased access to, paleontological resources resulting in increased visitation, looting, and/or vandalism. Cumulative impacts to paleontological resources result when there is a long-term loss to science and society of the scientific information that may have been provided by that resource had it not been disturbed.

3.10.1 Environmental Setting

BLM has reviewed the Paleontologic Resources assessment in Section 2.2.6 of the Stateline Solar Farm Plan of Development (POD; First Solar 2011) and the results of the paleontological literature and records search for the project site reported in Appendix I (Scott 2009) of the POD. BLM reviewed the online records database maintained by the University of California, Museum of Paleontology, and verified that no records were available for the Proposed Project area (University of California Museum of Paleontology 2012). All research was conducted in accordance with accepted assessment protocol (Society of Vertebrate Paleontologists 1995) and BLM protocols required in BLM IM 2008-009 and IM 2009-011 (BLM 2007; BLM 2008) to determine whether any known paleontological resources exist in the general area.

The paleontological resources literature and records review for the solar farm project area was conducted by the San Bernardino County Museum's (SBCM) Division of Geological Sciences (Scott 2009). Previous geologic mapping by C.W. Jennings in 1961 for the Geologic Map of California, Kingman Sheet describes the project area as Holocene alluvium probably overlying subsurface Quaternary lake sediments. Lacustrine sediments of similar age in the project vicinity have previously yielded fossil resources. For example, large mammal bone fragments were recovered from Quaternary lacustrine sediments near the northern end of Ivanpah Lake. SBCM concluded that the possible presence of Quaternary lacustrine sediments beneath the Stateline Solar Farm Project site indicates there may be a high potential for paleontological resources, however this could not be confirmed without further evaluation (Scott 2009).

The SBCM's Regional Paleontological Locality Inventory (RPLI) records one previously known paleontological resource (SBCM 1.2.4, remains of an indeterminate rodent [*Rodentia*]) located in the southeastern portion of the solar farm study area. Additional resources (SBCM 1.2.1, 1.2.2, and 1.2.3) were located within one mile of the southeastern end of the study area. Paleontological resources at these locations included fossil remains of tortoise (*Gopherus* sp.), kangaroo rat (*Dipodomys* sp.), wood rat (*Neotoma* sp.), other small vertebrates, a partial hackberry seed (*Celtis* sp.), and clasts of tufa from the high stand of Ivanpah Lake. The SBCM review noted that previous studies recorded assemblages of fossil hackberry seeds in nearby cave deposits containing Pleistocene vertebrate faunas. The SBCM also noted that tufa is common at the top of sedimentary sections at several Pleistocene lakes (including Valley Wells, Piute Valley, and Cadiz) in San Bernardino County. None of the paleontological resource locations near Ivanpah Lake have yielded fossil remains diagnostic of a specific temporal age,

though a Pleistocene age for these faunas is suggested (Scott 2009). The Museum did not recommend a paleontological survey of the project site. Paleontological monitoring of excavations greater than 5 feet in depths was recommended.

As discussed in Section 3.14 (Soil Resources), Geosphere Consultants conducted a geotechnical study of the proposed solar farm site in June 2008. During the geological field survey, 2 of the 13 shallow exploratory borings were classified all or partially composed of "Ql" consisting of Quaternary Lakebed Deposits. These locations would have the greatest potential for paleontological resources. Geosphere Consultants recommended a more detailed survey to confirm or provide additional information on a number of geotechnical concerns. This expanded survey could include additional subsurface borings and potentially gather additional information to resolve the potential for paleontological resources beneath the Stateline Solar Farm Project site.

No records were identified in the immediate vicinity of the project area in the University of California Museum of Paleontology database (University of California Museum of Paleontology 2012).

The extent and distribution of possible lacustrine sediments relative to the proposed solar farm site is unknown and difficult to determine without subsurface exploration. The nearest mapped surface exposure of lacustrine sediments are late-Pleistocene to Holocene in age and are located adjacent to the east side of the project site at an elevation of approximately 2,624 feet above mean sea level (USGS 2006). The lowest elevation on the solar farm site is *also* approximately *2,624* feet above mean sea level, which is *the same elevation as the* mapped lacustrine sediments.

The Pre-Cambrian metamorphic rocks in the bedrock outcrops southwest of the solar farm project site are considered to have negligible paleontological sensitivity.

The BLM's Potential Fossil Yield Classification (PFYC) system is used to classify the "relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts" in mappable geologic units—groups of rock with distinct identifying features. The PFYC system provides a baseline from which to predict, assess, and mitigate paleontological resources. There are five classes in the PFYC system: Class 1 (very low), Class 2 (low), Class 3 (moderate or unknown), Class 4 (high), and Class 5 (very high). The classes are based on the probability that a unit contains paleontological resources and the significance of the resources (BLM 2007).

The letters "a" and "b" are applied to Classes 3 to 5 to indicate the potential for adverse impacts to fossils due to ground-disturbing activities as follows: Class 3a (moderate potential), Class 3b (unknown potential), Class 4a (high potential), Class 4b (high potential with moderating circumstances), Class 5a (very high potential), Class 5b (very high potential with moderating circumstances). The term "moderating circumstances" in Class 4b and 5b indicates that though there is a high potential for paleontological resources, the potential for adverse impact is reduced because of the presence of specific conditions such as a bedrock unit with a protective layer of soil, thin cover of alluvial material, topographic conditions, or other condition providing some protection to the potential resources (BLM 2007).

Paleo Solutions conducted a review of the available geologic maps and determined a PFYC Classification for each of the geologic units present within the Stateline Solar Farm project area. The results of the mapping and classification are included in Figure 3.10-1 (Appendix A) and Table 3.10-1.

Table 3.10-1. PFYC Classification for the Stateline Solar Farm Project Site

PFYC Classification	Fossil Potential	Geological Unit
1	Very Low	Early Precambrian metamorphic
2	Low	Pennsylvanian Marine (CP)
2	Low	Paleozoic marine limestone (IP)
3a	Moderate	Pleistocene nonmarine (Qc)
3a	Moderate	Quaternary lake deposits
3b	Unknown	Quaternary alluvium (Qal)

The Early Precambrian metamorphic geologic units were determined to be unlikely to contain fossil remains. Vertebrate or significant invertebrate or plant fossils are either not present or are very rare in the Pennsylvanian Marine and Paleozoic marine limestone and therefore concern for paleontological resources is low in these units. Pleistocene nonmarine and Quaternary lake deposits are known to contain vertebrate fossils or scientifically significant nonvertebrate or plant fossils. Occurrences of these significant fossils are generally widely scattered. Common invertebrate or plant fossils are also present and hobby collecting opportunities may exist in this area. There is a low potential for the project to be sited on or to impact a significant fossil locality but a higher potential for the project to be sited on or impact common fossils. Ultimately, the potential fossil yield of these units within the project area cannot be determined without ground reconnaissance, therefore these units are rated with a moderate potential for fossils. Quaternary alluvium units exhibit the geologic characteristics and preservational conditions that suggest the potential for the presence of significant fossils; however, little information is available for paleontological resources in these units in this area. Ground reconnaissance and assessment is necessary before ground-disturbing activities are conducted in these geological units because of the unknown potential to contain paleontological resources.

Based on the above discussion, Society of Vertebrate Paleontology (SVP) criteria, the Paleo Solutions PFYC classification, and the confidential paleontological report appended to the Stateline Solar Farm Plan of Development, the probability that paleontological resources would be encountered during grading and excavation in the majority of the project area is considered to be unknown.

3.10.2 Applicable Regulations, Plan, and Standards

3.10.2.1 Federal

The management and preservation of paleontological resources on public lands are governed under various laws, regulations, and standards. For the past several decades, the BLM has used the FLPMA (1976) as the legislative foundation for its paleontological resource management policies. The BLM has also developed general procedural guidelines (Manual H-8720-1; *Handbook H8270;* Instructional Memorandum [IM] 2008-009; IM 2009-011) for the management of paleontological resources (BLM 2007; 2008). Paleontological resource management objectives include the evaluation, management, protection and location of fossils on BLM managed lands. Management policy also includes measures to ensure that proposed land-use projects do not inadvertently damage or destroy scientifically significant paleontological resources.

The implementation of paleontological mitigation measures designed in compliance with the following Federal and state laws and the BLM guidelines cited above would reduce adverse impacts on scientifically significant paleontological resources by preventing the destruction of significant fossils during project-related ground disturbance.

Paleontological Resources Preservation Act (PRPA) of 2009, Public Law 111-11, Title VI, Subtitle D

Omnibus Public Land Management Act of 2009, Paleontological Resources Preservation Subtitle (popular name the Paleontological Resources Preservation Act), 123 Stat. 1172, 16 U.S.C. 470aaa et seq., Sec. 6302. The Secretaries of the Interior and Agriculture "…shall manage and protect paleontological resources on Federal lands using scientific principles and expertise." The Act defines new legal authority for casual collecting and issuance of paleontological resources use permits; provides criteria for permits; requires confidentiality of locality data; specifies that specimens collected under permit are federal property and must be deposited in an approved repository; defines new penalties for criminal and civil violations and provisions for rewards and forfeiture; disallows commercial collection; and, requires inventory and monitoring of paleontological resources, and public awareness program.

Antiquities Act of 1906, 16 United States Code (U.S.C.) 431 et seq.

The Antiquities Act was the first law enacted to specifically establish that archaeological sites on public lands are important public resources, and it obligated federal agencies that manage public lands to preserve the scientific, commemorative, and cultural values of such sites National Park Service. This Act does not refer to paleontological resources specifically; however, the protection of "objects of antiquity" (understood to include paleontological resources) by various federal agencies, including the BLM and the National Park Service (NPS), is included in the Act.

Archeological Resources Protection Act (ARPA) 1979, 16 U.S.C. 470aa-470mm

ARPA requires protection of non-fossilized and fossilized paleontological specimens, or any portion or piece thereof, if found in an archeological context.

Federal Land Management and Policy Act of 1976 (43 U.S.C. 1712[c], 1732[b])

FLPMA defines significant fossils as: unique, rare or particularly well-preserved; an unusual assemblage of common fossils; being of high scientific interest; or providing important new data concerning [1] evolutionary trends, [2] development of biological communities, [3] interaction between or among organisms, [4] unusual or spectacular circumstances in the history of life, [5] or anatomical structure.

3.10.2.2 State and Local

The procedures, types of activities, persons, and public agencies required to comply with CEQA are defined in: Guidelines for the Implementation of CEQA, as amended March 29, 1999 (Title 14, Chapter 3, California Code of Regulations: 15000 et seq.). One of the questions listed in the CEQA Environmental Checklist (Section 15023, Appendix G, Section XIV, Part A) is: "Will the proposed project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?"

The State of California Public Resources Code (Chapter 1.7), Section 5097.5 and 30244, includes additional State level requirements for the assessment and management of paleontological resources. These statutes require reasonable mitigation of adverse impacts to paleontological resources resulting from development on State lands, define the removal of paleontological "sites" or "features" from State lands as a misdemeanor, and prohibit the

removal of any paleontological “site” or “feature” from State land without permission of the applicable jurisdictional agency. These protections apply only to State of California land, and therefore do not apply to the Proposed Action.

No other State or local laws and regulations are applicable to the Proposed Action.

3.11 Public Health and Safety

The following discussion addresses the existing environmental conditions, and applicable laws and regulations *applicable to* the proposed Stateline Solar Farm Project (Proposed Action or Project) related to potential impacts to *health and safety of* the public and workers. The analyses provided in Section 4.11 includes evaluation of impacts from seismic hazards, hazardous materials and waste management, emergency response, intentionally destructive acts, and worker safety at the proposed Project site.

3.11.1 Environmental Setting

3.11.1.1 Seismic and Geologic Setting

Geologic hazards are normally associated with seismicity (ground shaking), slope instability, subsidence, and expansive soils. Hazards related to ground shaking at the site include ground rupture, slope instability, liquefaction, and seismic compaction.

The Mojave Desert Province of southern California, in which the solar farm project site is located in a seismically active area of regional strike-slip faulting and extensional tectonics. BLM reviewed the Alquist-Priolo Special Studies Zone map database (California Geological Survey 2010b) and the *Fault Activity Map of California* (California Geological Survey 2010c). The project site does not lie within an earthquake fault zone as defined by the Alquist-Priolo Act of 1972 (California Geological Survey 2010b) and no active faults are shown on published maps as crossing the project site boundary.

A review of published geologic maps indicates three faults are adjacent to the project site. To the east of the project site is the Quaternary Stateline fault that trends northwest-southeast roughly parallel to the California-Nevada state line. This fault is mapped as concealed beneath the alluvial deposits in the valley (California Geological Survey 2010c). The Stateline Fault is the southern segment of the Pahrump Valley Fault Zone, which has been interpreted to be a right-lateral strike-slip structure with some vertical movement (USGS 2006). This fault has had movement in the early to middle Pleistocene (700,000 to 1,600,000 years) (California Geological Survey 2010c). The fault borders the east side of Ivanpah Valley, and crosses the valley north of the solar farm project site. Several small older faults are located within the range of mountains north of the project area and the Ivanpah Fault is located several miles to the west (California Geological Survey 2010a). No known recent surface rupture has been associated with any of these faults, however because several of these faults are potentially active, moderate ground shaking could occur at the solar farm project site as a result of earthquakes on any of these faults or as a result of regional earthquake activity.

The closest active faults to the project site are the Death Valley and Garlock Faults in California located approximately 50 miles to the west (Geosphere Consultants 2008). Movement on the north-northwest-striking Death Valley Fault is normal, and is related to extensional tectonics in the Great Basin, coupled with right-lateral strike-slip, related to San Andreas-style transform faulting. The Garlock Fault is a major east-west-striking, left-lateral strike-slip fault, also associated with regional transform faulting to the west (California Geological Survey 2010c).

The proposed Project does not lie within a designated earthquake fault zone as defined by the Alquist-Priolo Act of 1972 and no faults have been mapped within the project area (California Geological Survey 2010b). The site is located in Seismic Risk Zone 4. The potential for ground rupture at the site remains low; there are no active faults on the solar farm project site and both the Stateline and the Ivanpah faults are distant from the site. Ground acceleration from rupture of the Stateline fault system could be fairly high; however, the California Building Code establishes a high standard that must be followed for seismic design in the State of California.

The Applicant conducted a Phase 1 Geotechnical Reconnaissance Study of the project study area in 2008 (Geosphere Consultants 2008). For the geotechnical survey, Geosphere Consultants utilized the computer project EQSearch to identify recent seismicity in the area. The search identified one earthquake with a magnitude of 5.0 or greater and ten earthquakes with a magnitude of 4.0 or greater that have occurred within a 100 kilometer (62 mile) radius of the solar farm project site since the year 1800. The magnitude 5.0 earthquake occurred on 5 May 1939; the published epicenter was located approximately 40.5 miles northeast of the solar farm project site. Geosphere Consultants used the Bozorgnia, Campbell, and Niazi (1999) attenuation relationship for Holocene soil sites to determine the peak horizontal ground acceleration that may have occurred at the project site during this earthquake. The peak horizontal ground acceleration was estimated to be 0.021g for the median-plus-one-standard deviation (84th percentile) data point (Geosphere Consultants 2008).

The Project site is considered to have low potential for liquefaction and landslide. There is no evidence in the area that liquefaction induced by seismic ground motions have occurred. The depth to groundwater of more than 200 feet below ground surface indicates that the area is not prone to liquefaction surface distress.

Other geological hazards relate to the emerging field of medical geology (Finkelman and others 2010). Dusts may be a vector for naturally occurring medical geologic hazards such as arsenic and valley fever (coccidioidomycosis) fungal spores. The Centers for Disease Control (CDC) depicts the project area within the natural range of *Coccidioides* spp. fungi which cause valley fever (CDC 2012). No human health risk assessment exists for the project site and its landscape setting at present. Occupational effects during construction and maintenance and effects on residents in the region remain hypothetical without seeking information and analysis.

3.11.1.2 Hazardous Materials and Waste Management

Several characteristics of a project location affect the potential for an accidental release of a hazardous material that could cause public health impacts. These include:

- local meteorology;
- terrain characteristics;
- location of population centers and sensitive receptors relative to the project;
- existing public health concerns; and
- existing environmental site contamination.

Meteorological Conditions

Meteorological conditions, including wind speed, wind direction, and air temperature, affect both the extent of accidentally released and air-dispersed hazardous materials and the direction in which they would be transported. This interaction affects the potential magnitude and extent of the public's exposure to such materials, as well as human health risks. When wind speeds are low and the atmosphere is stable, dispersion is lessened. Such stagnation can lead to increased localized human exposure. In contrast, high wind speeds can mobilize hazardous components and transport them to nearby populations. Both conditions can occur at the project site.

Table 3.13-1 below summarizes recorded wind speeds and ambient air temperatures are summarized in for 2011 and for the last five years, respectively.

Table 3.11-1. Summary of Historical Temperature and Wind Data

Parameter	Max	Avg	Min
February 14, 2011 – February 14, 2012			
Max Temperature	110	78	43
Mean Temperature	97	66	34
Min Temperature	86	55	24
Wind	51	9	0
Wind Gust	62	32	16
February 14, 2007 – February 14, 2012			
Max Temperature	117	80	41
Mean Temperature	102	69	34
Min Temperature	90	57	24
Wind	45	10	0
Wind Gust	58	32	16

Source: www.wunderground.com accessed on February 14, 2012.
Units: Temperature - °F; Wind speed – miles per hour

Terrain Characteristics

The topography of the Stateline Solar Farm Project and its immediate surrounding areas is essentially flat. The site is adjacent to the north-northwest edge of Ivanpah Dry Lake in the Ivanpah Valley, on a series of alluvial fans slope gently toward Ivanpah Dry Lake. The Stateline Solar Farm Project is generally bounded by the Clark Mountains to the north and west and the Lucy Gray Mountains to the east.

Maximum change in ground surface elevation across the site is approximately 130 feet. The upper portions of the alluvial fans slope gently toward Ivanpah Dry Lake with a change in ground elevation on the order of 15 feet of fall per 1500 feet of horizontal run (slope of 100:1 horizontal to vertical) or less. The central portion of the site is relatively flat with a change in ground elevation on the order of less than 5 feet of fall per 1500 feet of horizontal run (slope of 300:1 horizontal to vertical) or less. The general slope and drainage is toward Ivanpah Dry Lake, except where locally modified by access roads or other manmade features. The local terrain slope moves runoff from the local area and any uncaptured liquid runoff from the site in an easterly direction (Geosphere Consultants, Inc 2008).

Location of Exposed Populations and Sensitive Receptors

The general population includes many sensitive groups that may be at greater risk from exposure to emitted pollutants. These sensitive subgroups include the very young, the elderly, and those with existing illnesses. The location of the population in the area surrounding the project site may be important to potential health risk.

There are no sensitive receptors in the project vicinity. *There are no schools or churches in or near the project study area.* The nearest schools, Sandy Valley Elementary School and Sandy Valley Middle School, are located approximately 17 miles north-northeast of the project area in Nevada. The closest residence is located at the northeast corner of the intersection of I-15 and Yates Well Road, approximately 2 miles east of the Project Study Area and approximately 250 feet from a potential project construction haul route. The hotels in Primm, Nevada, are located approximately 1.5 miles to the northeast.

Existing Environmental Site Contamination

According to the California Department of Toxic Substances Control (DTSC) Hazardous Waste and Substances site "Cortese" List, no hazardous waste facilities subject to corrective action are located on the proposed Desert Stateline site (DTSC 2012). A Phase I Environmental Site Assessment for the project was performed by Earth Systems Southwest in December 2010, and updated in 2012, to evaluate the potential for the presence of soil or groundwater contamination due to past handling, storage, and disposal of hazardous materials or petroleum products on or near the property (Earth Systems Southwest 2012). Based on the results of this assessment, no documented releases of hazardous materials have occurred within the study area. Known contaminated sites in the general area include the former Biogen Power Plant located 0.14 miles northeast of the project site, and the former Molycorp New Ivanpah Evaporation Pond (NIEP, now owned by Chevron Environmental Management Company) located on Ivanpah Dry Lake approximately 2 miles southeast of the site. The Biogen facility has been removed and Molycorp has permanently ceased use of the NIEP. The NIEP is currently undergoing remediation under the oversight of the Lahontan Regional Water Quality Control Board. Contamination from the Molycorp Mine and its offsite waste disposal system has undergone substantial investigation, and no hazardous materials have been released or migrated to the location of the Proposed Project.

3.11.1.3 Emergency Response

Although the solar PV panels and associated components contain few flammable components, the presence of electrical generating equipment and electrical cables, along with various oils (lubricating, cooling, and hydraulic), and petroleum fuel products creates the potential for fire or a medical emergency within the facility during construction and maintenance. Storage and use of these substances may occur at the project substation, in electrical transmission structures, staging areas, and the O&M facility. A comprehensive Fire Management Plan would be prepared and included in the Plan of Development.

Emergency response services to the site would be under the jurisdiction of the San Bernardino County Fire Department (SBCFD). Station 53 is approximately 40 miles from the project site, located at 65 Kingston Circle, Baker, California, and would be the first responder to the Stateline Solar Farm Project, with a response time of approximately 45 minutes. The SBCFD also has a Mutual Aid Agreement with Clark County (Nevada) Fire Department for responses requiring more assistance, but this assistance is voluntary.

In San Bernardino County, hazardous materials permits are issued by SBCFD, which is also a first responder in the case of releases.. Because of the highly remote and rural area of Stateline Solar Farm Project, services are limited and spread out. San Bernardino County Firefighters receive specialized training to address emergency responses to industrial hazards. The response time to the project site, with full resources capable of managing large-scale hazardous materials spills, would be 3 to 4 hours. Hazardous materials service is provided out of the SBCFD station in the City of Fontana, Station 78, which is located approximately 170 miles from the project site. The San Bernardino County HazMat Team response time to a hazmat emergency call from Stateline Solar Farm Project would be approximately 3 hours (Peebles 2012). The remote location of the facility lengthens the response time, but also reduces the risk of off-site consequences to the public. The SBCFD also has a Mutual Aid Agreement with Clark County (Nevada) Fire Department for responses requiring more assistance, but this assistance is voluntary.

3.11.1.4 Worker Safety

Construction and operation and maintenance of the Project would follow the site-specific Health and Safety Plan. The program would be designed to meet the Occupational Safety and Health Administration (OSHA) and California OSHA (CalOSHA) requirements. As part of the health and safety program, an Illness and Injury Prevention Program, Fire Prevention Program, Personal Protective Equipment Program, Hazardous Spill Program, and an Emergency Action Plan would be developed *covering the* construction, operation and maintenance, and decommissioning *of the Project*.

3.11.1.5 Intentionally Destructive Acts

The number and high profile of international and domestic terrorist attacks during the last decade presents a new and realistic threat to the safety and security of the people of the U.S., infrastructure, and resources. There is a potential for intentional destructive acts, such as sabotage or terrorism events, to cause impacts to human health and the environment. As opposed to industrial hazards, collisions, and natural events, where it is possible to estimate event probabilities based on historical statistical data and information, it is not possible to accurately estimate the probability of an act of terrorism or sabotage. These risk events generally focus on the consequences of such events. In general, the consequences of a sabotage or terrorist attack on a solar facility would be expected to be similar to those discussed with respect to seismic hazards and hazardous materials regarding accidental and natural events.

3.11.2 Applicable Regulations, Plans, and Standards

The following federal, state, and local laws and policies apply to the protection of public health, worker safety, and hazardous materials management. BLM's analysis examines the project's compliance with these requirements.

3.11.2.1 Federal

Comprehensive Environmental Response and Liability Act (CERCLA). Superfund Amendments and Reauthorization Act (SARA) of 1986 (42 U.S.C. Section 9601 et seq.)

The SARA amends CERCLA and governs hazardous substances. The applicable part of SARA for the proposed Project Solar Farm is Title III, otherwise known as the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA). Title III requires states to establish a process for developing local chemical emergency preparedness programs and to receive and disseminate information on hazardous substances present at facilities in local communities. The law provides primarily for planning, reporting, and notification concerning hazardous substances. Key sections of the law are:

Section 302 — Requires one time notification when extremely hazardous substances (EHSs) are present in excess of their threshold planning quantities (TPQs). EHSs and their TPQs are found in Appendices A and B to 40 CFR Part 355.

Section 304 — Requires immediate notification to the local emergency planning committee (LEPC) and the state emergency response commission (SERC) when a hazardous material is released in excess of its reportable quantity (RQ). If a CERCLA-listed hazardous substance RQ is released, notification must also be given to the National Response Center in Washington, D.C. (RQs are listed in 40 CFR Part 302, Table 302.4). These notifications are in addition to notifications given to the local emergency response team or fire personnel.

Section 311 — Requires that either material safety data sheets (MSDSs) for all hazardous materials or a list of all hazardous materials be submitted to the SERC, LEPC, and local fire department.

Clean Air Act (CAA) (42 U.S.C. 7401 et seq. as amended)

Regulations under the CAA are designed to prevent accidental releases of hazardous materials to the air. The regulations require facilities that store a Threshold Quantity (TQ) or greater of listed regulated substances to develop a Risk Management Plan (RMP), including hazard assessments and response programs to prevent accidental releases of listed chemicals.

Clean Water Act (CWA) (40 CFR 112)

The Spill Prevention, Control, and Countermeasures (SPCC) program under the CWA is designed to prevent or contain the discharge or threat of discharge of oil into navigable waters or adjoining shorelines**.** Regulations under the CWA require facilities to prepare a written SPCC Plan if they store oil and its release would pose a threat to navigable waters.

Toxic Substances Control Act (15 U.S.C. 2605)/Resource Conservation and Recovery Act (RCRA) (42 U.S.C. 6901 et seq.)/Hazardous and Solid Waste Act (HSWA)

The Federal Toxic Substances Control Act (1976) and the RCRA of 1976 established a program administered by the EPA for the regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. The RCRA was amended in 1984 by the HSWA, which affirmed and extended the “cradle to grave” system of regulating hazardous wastes.

U.S. Department of Transportation (DOT). Hazardous Materials Transport Act (49 U.S.C. 5101)

The DOT, in conjunction with the EPA, is responsible for enforcement and implementation of federal laws and regulations pertaining to transportation of hazardous materials. The Hazardous Materials Transportation Act of 1974 directs the DOT to establish criteria and regulations regarding the safe storage and transportation of hazardous materials. CFR 49, 171–180, regulates the transportation of hazardous materials, types of material defined as hazardous, and the marking of vehicles transporting hazardous materials.

Occupational Safety and Health Administration (OSHA), Title 29 CFR 1910

OSHA’s mission is to ensure the safety and health of America’s workers by setting and enforcing standards; providing training, outreach, and education; establishing partnerships; and encouraging continual improvement in workplace safety and health. The OSHA staff establishes and enforces protective standards and reaches out to employers and employees through technical assistance and consultation programs.

3.11.2.2 State

Health and Safety Code, Section 25249.5 et seq.

Safe Drinking Water and Toxics Enforcement Act, Proposition 65. This law identifies chemicals that cause cancer and reproductive toxicity, provides information for the public, and prevents discharge of the chemicals into sources of drinking water. Lists of the chemicals of concern are published and updated periodically. The Act is administered by California's Office of Environmental Health Hazard Assessment.

Health and Safety Code, Section 25270, Aboveground Petroleum Storage Act. Health and Safety Code Sections 25270 to 25270.13 ensure compliance with the federal CWA. The law applies to facilities that operate a petroleum aboveground storage tank (AST) with a capacity greater than 660 gallons or combined ASTs capacity greater than 1,320 gallons or oil-filled equipment where there is a reasonable possibility that the tank(s) or equipment may discharge oil in "harmful quantities" into navigable waters or adjoining shore lands. If a facility falls under these criteria, it must prepare a SPCC plan.

Health and Safety Code, Section 25500 et seq.

This code and the related regulations in 19 CCR 2620, et seq., require local governments to regulate local business storage of hazardous materials in excess of certain quantities. The law also requires that entities storing hazardous materials be prepared to respond to releases. Those using and storing hazardous materials are required to submit a Hazardous Materials Business Plan (HMBP) to their local Certified Unified Program Agency (CUPA) and to report releases to their CUPA and the State Office of Emergency Services.

Health and Safety Code, Section 25531 et seq.

This code and the California Accidental Release Program (CalARP) regulate the registration and handling of regulated substances. Regulated substances are any chemicals designated as an extremely hazardous substance by the EPA as part of its implementation of SARA Title III. Health and Safety Code Section 25531 overlaps or duplicates some of the requirements of SARA and the CAA. Facilities handling or storing regulated substances at or above TPQs must register with their local CUPA and prepare a RMP.

Health and Safety Code, Section 41700

This section states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."

CCR Title 8, Section 5189, Process Safety Management of Acutely Hazardous Materials. Requires facility owners to develop and implement effective safety management plans to ensure that large quantities of hazardous materials are handled safely. While these requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the RMP process.

Hazardous Materials Release Response Plans and Inventory Act of 1985

The Hazardous Materials Release Response Plans and Inventory Act, also known as the Business Plan Act, requires businesses using hazardous materials to prepare a plan that describes their facilities, inventories, emergency response plans, and training programs. Hazardous materials are defined as unsafe raw or unused materials that are part of a process or manufacturing step. They are not considered hazardous waste. Health concerns pertaining to the release of hazardous materials, however, are similar to those relating to hazardous waste.

Hazardous Waste Control Act (HWCA)

The HWCA created the State hazardous waste management program, which is similar to but more stringent than the federal RCRA program. The act is implemented by regulations contained in Title 26 of the CCR, which describes the following required aspects for the proper management of hazardous waste:

- Identification and classification;
- Generation and transportation;
- Design and permitting of recycling, treatment, storage, and disposal facilities;
- Treatment standards;
- Operation of facilities and staff training; and
- Closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste. Under the HWCA and Title 26, the generator of hazardous waste must complete a manifest that accompanies the waste from generator to transporter to the ultimate disposal location. Copies of the manifest must be filed with the California DTSC.

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program)

This program requires the administrative consolidation of six hazardous materials and waste programs (Program Elements) under one agency, a CUPA. The Program Elements consolidated under the Unified Program are:

- Hazardous Waste Generator and On-site Hazardous Waste Treatment Programs (a.k.a., Tiered Permitting);
- Aboveground Petroleum Storage Tank SPCC;
- Hazardous Materials Release Response Plans and Inventory Program (a.k.a. Hazardous Materials Disclosure or “Community-Right-To-Know”);
- CalARP;
- Underground Storage Tank (UST) Program; and
- Uniform Fire Code Plans and Inventory Requirements.

The Unified Program is intended to provide relief to businesses complying with the overlapping and sometimes conflicting requirements of formerly independently managed programs. The Unified Program is implemented at the local government level by CUPAs. Most CUPAs have been established as a function of a local environmental health or fire department. SBCFD acts

as the CUPA for this project area. Some CUPAs have contractual agreements with another local agency, a participating agency, which implements one or more Program Elements in coordination with the CUPA.

California Environmental Protection Agency (Cal/EPA)

The Cal/EPA was created in 1991, which unified California's environmental authority in a single cabinet-level agency and brought the Air Resources Board (ARB), State Water Resources Control Board (SWRCB), Regional Water Quality Control Boards (RWQCBs), Integrated Waste Management Board (IWMB), DTSC, Office of Environmental Health Hazard Assessment (OEHHA), and Department of Pesticide Regulation (DPR) under one agency. These agencies were placed within the Cal/EPA "umbrella" for the protection of human health and the environment and to ensure the coordinated deployment of State resources. Their mission is to restore, protect and enhance the environment, to ensure public health, environmental quality, and economic vitality.

Department of Toxic Substance Control (DTSC)

The DTSC is a department of Cal/EPA and is the primary agency in California that regulates hazardous waste, cleans-up existing contamination, and looks for ways to reduce the hazardous waste produced in California. The DTSC regulates hazardous waste in California primarily under the authority of the federal RCRA and the California Health and Safety Code (primarily Division 20, Chapters 6.5 through 10.6, and Title 22, Division 4.5). Other laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning.

Government Code §65962.5 (commonly referred to as the "Cortese" List) includes the DTSC listed hazardous waste facilities and sites, Department of Health Services (DHS) lists of contaminated drinking water wells, sites listed by the SWRCB as having underground storage tank leaks and which have had a discharge of hazardous wastes or materials into the water or groundwater, and lists from local regulatory agencies of sites that have had a known migration of hazardous waste/material.

California Office of Emergency Services (OES)

In order to protect the public health, safety, and the environment, the California OES is responsible for establishing and managing statewide standards for business and area plans relating to the handling and release or threatened release of hazardous materials. Basic information on hazardous materials handled, used, stored, or disposed of (including location, type, quantity, and the health risks) needs to be available to firefighters, public safety officers, and regulatory agencies. This basic information needs to be included in business plans in order to prevent or mitigate the damage to the health and safety of persons and the environment from the release or threatened release of these materials into the workplace and environment. These regulations are covered under Chapter 6.95 of the California Health and Safety Code Article 1–Hazardous Materials Release Response and Inventory Program (Sections 25500 to 25520) and Article 2–Hazardous Materials Management (Sections 25531 to 25543.3).

CCR Title 19, Public Safety, Division 2, OES, Chapter 4–Hazardous Material Release Reporting, Inventory, And Response Plans, Article 4 (Minimum Standards for Business Plans) establishes minimum Statewide standards for HMBPs. These plans shall include the following: (1) a hazardous material inventory in accordance with Sections 2729.2 to 2729.7; (2) emergency response plans and procedures in accordance with Section 2731; and (3) training program information in accordance with Section 2732. Business plans contain basic information

on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of in the State. Each business shall prepare a HMBP if that business uses, handles, or stores a hazardous material or an extremely hazardous material in quantities greater than or equal to the following:

- 500 pounds of a solid substance;
- 55 gallons of a liquid;
- 200 cubic feet of compressed gas;
- A hazardous compressed gas in any amount; and
- Hazardous waste in any quantity.

California Occupational Safety and Health Administration (CalOSHA)

CalOSHA is the primary agency responsible for worker safety in the handling and use of chemicals in the workplace. CalOSHA standards are generally more stringent than federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR Sections 337-340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings.

California Highway Patrol (CHP)

A valid Hazardous Materials Transportation License, issued by the CHP, is required by the laws and regulations of State of California Vehicle Code Section 3200.5 for transportation of either:

- Hazardous materials shipments for which the display of placards is required by State regulations; or
- Hazardous materials shipments of more than 500 pounds, which would require placards if shipping greater amounts in the same manner.

Additional requirements on the transportation of explosives, inhalation hazards, and radioactive materials are enforced by the CHP under the authority of the State Vehicle Code. Transportation of explosives generally requires consistency with additional rules and regulations for routing, safe stopping distances, and inspection stops (Title 14, CCR, Chapter 6, Article 1, Sections 1150-1152.10). Inhalation hazards face similar, more restrictive rules and regulations (Title 13, CCR, Chapter 6, Article 2.5, Sections 1157-1157.8). Radioactive materials are restricted to specific safe routes for transportation of such materials.

California Public Utilities Commission (CPUC) General Order (GO) 95: Rules for Overhead Electric Line Construction

GO 95 is the key standard governing the design, construction, operation, and maintenance of overhead electric lines in the State. It was adopted in 1941 and updated most recently in 2006. GO 95 includes safety standards for overhead electric lines, including minimum distances for conductor spacing, minimum conductor ground clearance, standards for calculating maximum sag, electric line inspection requirements, and vegetation clearance requirements. The latter, governed by rule 35, and inspection requirements, governed by Rule 31.2 are summarized here.

GO 95, Rule 35: Tree Trimming, defines minimum vegetation clearances around power lines. Rule 35 guidelines require 10-foot radial clearances for any conductor of a line operating at

110,000 Volts or more, but less than 300,000 Volts. This requirement would apply to the proposed 230-kV lines.

GO 95, Rule 31.2: Inspection of Lines, requires that lines be inspected frequently and thoroughly for the purpose of ensuring that they are in good condition, and that lines temporarily out of service be inspected and maintained in such condition as not to create a hazard.

Public Resources Code (PRC) 4292, Powerline Hazard Reduction

PRC 4292 requires a 10-foot clearance of any tree branches or ground vegetation from around the base of power poles carrying more than 110 kV. The firebreak clearances required by PRC 4292 are applicable within an imaginary cylindrical space surrounding each pole or tower on which a switch, fuse, transformer or lightning arrester is attached and surrounding each dead-end or corner pole, unless such pole or tower is exempt from minimum clearance requirements by provisions of PRC 4296. Proposed project structures would be primarily exempt due to their design specifications.

PRC 4293, Powerline Clearance Required

PRC 4293 presents guidelines for line clearance including a minimum of 10 feet of vegetation clearance from any conductor operating at 110,000 volts or higher.

CCR Title 14, Section 1254

CCR 14 Section 1254 presents guidelines for minimum clearance requirements on non-exempt utility poles. The proposed project structures would be primarily exempted from the clearance requirements with the exception of cable poles and dead-end structures.

As shown in Figure 4.8-1 of CCR 14 Section 1254, the firebreak clearances required by PRC 4292 are applicable within an imaginary cylindrical space surrounding each pole or tower on which a switch, fuse, transformer or lightning arrester is attached and surrounding each dead-end or corner pole, unless such pole or tower is exempt from minimum clearance requirements by provisions of 14, CCR, 1255 or PRC 4296. The radius of the cylindroid is 3.1 meters (10 feet) measured horizontally from the outer circumference of the specified pole or tower with height equal to the distance from the intersection of the imaginary vertical exterior surface of the cylindroid with the ground to an intersection with a horizontal plane passing through the highest point at which a conductor is attached to such pole or tower. Flammable vegetation and materials located wholly or partially within the firebreak space shall be treated as follows:

At ground level – remove flammable materials, including but not limited to, ground litter, duff and dead or desiccated vegetation that will propagate fire

From 0 to 2.4 meters (0 to 8 feet) above ground level remove flammable trash, debris or other materials, grass, herbaceous and brush vegetation. All limbs and foliage of living trees shall be removed up to a height of 2.4 meters (8 feet).

From 2.4 meters (8 feet) to horizontal plane of highest point of conductor attachment remove dead, diseased or dying limbs and foliage from living sound trees and any dead, diseased or dying trees in their entirety.

3.11.2.3 Local

Certified Unified Program Authority (CUPA)

The SBCFD acts as the CUPA, and is responsible for reviewing Hazardous Materials Business Plans.

Mojave Desert Air Quality Management District (MDAQMD)

Activities of the Proposed Project in San Bernardino County would be subject to MDAQMD rules and regulations, including:

Rule 403 - Fugitive Dust

A person shall not cause or allow the emissions of fugitive dust from any transport, handling, construction or storage activity so that the presence of such dust remains visible in the atmosphere beyond the property line of the emission source (does not apply to emissions emanating from unpaved roadways open to public travel or farm roads). This exclusion shall not apply to industrial or commercial facilities.

Rule 403.2 - Fugitive Dust Control for the Mojave Desert Planning Area

This rule aims to ensure that the NAAQS for PM_{10} will not be exceeded due to anthropogenic sources of fugitive dust within the Mojave Desert Planning Area, and to implement the control measures contained in the Mojave Desert Planning Area Federal PM_{10} Attainment Plan.

Rule 402 - Nuisance

A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

3.12 Recreation and Tourism

The following discussion addresses existing recreational resources within and near the Project area, and describes existing laws and regulations relevant to those resources. The affected environment represents "baseline" conditions that contribute to recreational resources of the Project Study Area. For the purposes of this analysis, the recreation study area has been defined as the area within Ivanpah Valley. Additional recreation resources that are outside of the recreation study area, but which have national, regional, or local significance that could be impacted by the Proposed Action and alternatives, are also included in this analysis. This is an appropriate study area for recreation because it captures all major recreation resources that contribute to baseline conditions and could potentially be affected by activities related to the proposed Stateline Solar Farm facility.

3.12.1 Environmental Setting

Recreation has been and continues to be an important use of public land in the California Desert, including the Clark Mountain and Ivanpah Valley areas. The FLPMA recognizes recreation as a principal or major use of public land, and in its Declaration of Policy (Title I) states that it is the policy of the United States that the public lands be managed in a manner that will provide for outdoor recreation. Recreational uses of public lands may either be informal, casual uses which are managed by BLM through the land use planning process, or formally-approved uses managed through a BLM permitting process.

3.12.1.1 Recreation Resources on the Project Site

The proposed Stateline Solar Farm facility would be located on 2,143 acres of open desert land in San Bernardino County that is currently used for recreation activities. The entire project site is located within the Multiple-Use Class (MUC), Limited Use (L), under the BLM's CDCA Plan. This classification allows for low to moderate recreation activities, including non-competitive vehicle touring and events on approved routes of travel (BLM 1980).

In addition, the NEMO amendments to the CDCA Plan (BLM 2002) designated open routes of travel in the area, including routes that pass through the site of the proposed facility. The proposed facility area includes three routes of travel designated by BLM as open routes. These routes include route 699226 (1.4 miles encompassed by the Proposed Action), 699198 (2.0 miles), and 699238 (1.4 miles). Off-road, recreational vehicle trails currently authorized by BLM which run through the proposed site would be re-located outside of the project boundary fence as necessary and those relocated routes would be designated as open by the BLM. The closed portions of the routes would be removed from the list of open routes on BLM's Off Highway Vehicle (OHV) designation. The replacement routes would not be included within the ROW grant for the project. Roads within and adjacent to the proposed project site are used annually for the Los Angeles, Barstow to Las Vegas Dual Sport Motorcycle Tour.

3.12.1.2 Recreation Resources Surrounding the Project Site

The Mojave Desert is a popular recreation destination, with people drawn to its open spaces, diverse landscapes, unique geography, and freedom from the restrictions of more urban areas. The desert provides resources that are necessary for a variety of recreational experiences. These resources include unique geography such as dry lakes and sand dunes, scenic values, solitude, and freedom from the structure and regulations of urban areas. In general, all recreational activities in the desert are dependent upon vehicle access to some degree, with visitors directed to travel on previously designated and marked motorized vehicle routes. Most public recreation use of BLM-administered lands is casual, and unsupervised. BLM

management of some recreational activities occurs in relation to OHV events, permitted commercial and organized activities (bighorn sheep hunts, trail rides, and vision quests), and within specific local wildlife conservation sites. These activities are formally authorized through the Special Recreation Permit process.

A variety of *outdoor* recreational activities occur on public lands in the area of the proposed facility. These include golfing, auto touring, backpacking, biking, camping, climbing, hiking, horseback riding, nature walks, star gazing, wilderness areas, and wildlife viewing. In addition, sightseers, painters, and photographers are drawn by spring wildflower displays, and year-round bird-watching. Clark Mountain, managed by the Mojave National Preserve and located a few miles to the west of the proposed project location, provides rock climbing, hiking, hunting, and wildlife viewing.

Tourism Development

The area at the northern end of Ivanpah Dry Lake, where I-15 crosses the Nevada border, has undergone substantial development as a tourist destination. This development includes casinos and associated hotels and restaurants located 4.5 miles to the northeast of the proposed project location. The Primm Valley Golf Course is located within 0.5 miles of the proposed project location.

Special Designation Areas

Outdoor recreation activities, including hiking, camping, and viewing of wildlife, occur throughout the region in areas specially designated for recreational activities, in areas designated for protection of natural resources, as well as outside of specially designated areas. The special designation areas in the region are discussed in Sections 3.15 and 4.15, and that analysis is focused on the impact of the project on their protected resource values. The discussion below focuses on the recreation activities that also occur in those areas.

Designated Recreation Areas

The proposed facility would be located within Ivanpah Valley, which comprises approximately 37,280 acres. Although not designated as a national recreation area, the Ivanpah Dry Lake was designated in the CDCA Plan for non-motorized, open-space recreational activities. The BLM issues both Special Recreation Permits and casual use permits for recreational use of the Dry Lake for land sailing and kite buggy use. The Dry Lake is the location of National and International Land Sailing Regattas. Additionally, world speed trials in which land sailing speed records have been set occur on Ivanpah Dry Lake. The Dry Lake is also used for photography and film projects, for both recreational and commercial purposes. Additional recreational activities include long distance bow and arrow target shooting, hang gliding, and model rocket and airplane flying. BLM issues approximately 250 permits per year for recreational activities on the Dry Lake.

The proposed facility would be located within a few miles of the 216,300 acre Jean Lake/Roach Lake Special Recreation Management Area (SRMA), which is located in Nevada on the north side of Primm. The Jean Lake/Roach Lake SRMA was established in the BLM Las Vegas Resource Management Plan (BLM 1998) for intensive recreation opportunities, including competitive OHV and other recreational events.

Wilderness Areas

Wilderness areas near the proposed facility site are major attractions for recreation activities including hiking and camping, and biological resources are also an attraction for nature observation. Special Designation Areas, including Wilderness areas, within the vicinity of the Proposed Action are shown in Figure 3.15-1. The wilderness areas closest to the project site which are managed by BLM include the Stateline Wilderness (located within 1 mile to the north) and the Mesquite Wilderness (located 2.5 miles to the west). The Clark Mountain Wilderness, managed by the Mojave National Preserve, is located approximately 4 miles to the southwest of the proposed facility.

Areas of Critical Environmental Concern/Desert Wildlife Management Areas

ACECs and DWMAs are areas specially designated by BLM to protect natural resources and, like wilderness areas, are used for outdoor recreational activities such as hiking, camping, and observing biological resources. As shown in Figure 2-1, the proposed Project would be located approximately 2 miles to the west of the current location of the Ivanpah Desert Wildlife Management Area (DWMA). The Proposed Action would also include a modification of the boundary of the DWMA, as discussed in Section 2.1.3.6 and shown in Figure 2-1. Once modified, the boundary of the DWMA and the solar facility would be adjacent to each other. However, the solar facility would not be located in any current or planned ACEC or DWMA.

Recreational activities allowed in ACECs are determined by the resources and values for which the ACECs were established, and by the associated ACEC Management Plan. Most ACECs, including the Ivanpah DWMA, allow low-intensity recreation use that is compatible with protection of the relevant values.

3.12.2 Applicable Regulations, Plan, and Standards

3.12.2.1 Federal

The proposed Stateline Solar Farm facility would be located entirely on BLM-administered lands in the Ivanpah Valley. The following is a discussion of the Federal, state, and local plans and policies that would be applicable to the project site.

Federal Land Policy and Management Act of 1976 (FLPMA)

The FLPMA establishes public land policy; guidelines for administration; and provides for the management, protection, development, and enhancement of public lands. In particular, the FLPMA's relevance to the Proposed Action is that Title V, Section 501, establishes BLM's authority to grant ROWs for generation, transmission, and distribution of electrical energy. Under FLPMA, the BLM is responsible for the development of energy resources on BLM-administered lands in a manner that balances diverse resource uses and that takes into account the long-term needs of future generations for renewable and non-renewable resources. Among those use, FLPMA recognizes that the public lands be managed in a manner which will provide for outdoor recreation.

California Desert Conservation Area Plan

The 25 million-acre CDCA Plan Area contains over 12 million acres of public lands spread within the area known as the California Desert, which includes the following three deserts: the Mojave, the Sonoran, and a small portion of the Great Basin. Approximately 10 million acres of the CDCA public lands are administered by the BLM.

The CDCA Plan is a comprehensive, long-range plan with goals and specific actions for the management, use, development, and protection of the resources and public lands within the CDCA, and it is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The plan's goals and actions for each resource are established in its 12 elements. Each of the plan elements provides both a desert-wide perspective of the planning decisions for one major resource or issue of public concern as well as more specific interpretation of multiple-use class guidelines for a given resource and its associated activities.

The CDCA Plan defines MUCs for BLM-managed lands in the CDCA, which includes the land area encompassing the proposed project location.

Northern and Eastern Mojave Desert Management Plan Amendment

The purpose of the NEMO amendment (BLM 2002) to the CDCA Plan was to evaluate land use changes necessary to protect threatened and endangered species. This amendment included changes in permitted recreational uses and designated routes of travel.

3.12.2.2 State

There are no state regulations that are applicable to recreational resources within the project site. There are also no state-designated recreational areas in the vicinity of the proposed facility.

3.12.2.3 Local

Recreation goals and policies are outlined in the San Bernardino County General Plan's Land Use and Open Space Elements (County of San Bernardino 2007). Because the facility would be located entirely on BLM-managed public lands, the San Bernardino County General Plan would not be applicable. There are no County-designated recreational areas in the vicinity of the proposed Project.

3.13 Social and Economic Conditions

This section describes the *baseline* social and economic conditions *in the Project area*. The Stateline Solar Farm Project and communities are part of a dynamic socioeconomic system. The *Proposed Action and surrounding* communities provide the people, goods, and services required by the Project construction and operations. The project activities, in turn, create the demand and pay for the people, goods, and services in the form of wages, salaries, and benefits for jobs and dollar expenditures for goods and services.

3.13.1 Environmental Setting

The following discussion describes the social and economic environment in the region of influence (ROI) of the *Proposed Action*. The ROI is defined by the area where project employees and their families reside, spend their income, and use their benefits, thereby further affecting economic conditions of the region. The Applicant indicates that a construction workforce of approximately 600 employees at its peak from San Bernardino County and the surrounding region *will be required in connection with the Project* (First Solar 2011). The estimated 7 to 10 operational workers are assumed to live within the ROI. Therefore, this analysis defines the socioeconomic ROI consists of San Bernardino County in California and Clark County in Nevada. San Bernardino County is bordered on the north by Inyo County, on the south by Riverside County, on the west by Los Angeles, Kern, and Orange Counties; on the east by Clark County, Nevada, and also by portions of Mojave and La Paz Counties in Arizona. There are 24 incorporated cities in San Bernardino County, including Fontana, Ontario, Rancho Cucamonga, and San Bernardino. There are five incorporated cities in Clark County, Nevada, including Las Vegas.

The nearest service center to the proposed project is Primm, Nevada, located approximately 4 miles northeast of the project area. Baker, California is the closest service center in California, located approximately 50 miles from the proposed project. Primm, Nevada, and Baker, California provide services including restaurants, fueling facilities, and lodging.

Population and Population Density

San Bernardino County, California, and Clark County, Nevada, are the areas that may be affected by population in-migration resulting from the proposed solar farm facility. Table 3.13-1 summarizes current and forecasted population trends in the ROI. The population of San Bernardino County increased by 19.1 percent between 2000 and 2010, while the population of Clark County increased by 41.8 percent during the same period.

Table 3.13-1. Population Profile of the ROI, Year 2000–2030

	Year			
Area	**2000 Population**	**2010 Population**	**2020 Projected Population**	**2030 Projected Population**
San Bernardino County, CA	1,709,434	2,035,210	2,581,371	2,958,939
Clark County, NV	1,375,765	1,951,269	2,209,526	2,430,896

Source: U.S. Census Bureau (USCB) 2012a; USCB 2012b; California Department of Finance (CDOF) 2012; Nevada Small Business Development Center/The Nevada State Demographer's Office edited and revised April 21, 2012).

San Bernardino County, California, which comprises approximately 20,000 square miles, is the largest county by land area in the continental United States and is mostly desert. Approximately 75 percent of the population resides in the valley region in the southwestern corner of the county, closest to the coast (San Bernardino County 2011a). In 2010, there were 101.5 persons

per square mile in San Bernardino County, which is less than half the population density of California (239.1 persons per square mile) (USCB 2012b).

Clark County, Nevada, is the nation's fourteenth largest county by land area. The county is home to 70 percent of the state's population and includes its most populous city, Las Vegas (Clark County 2012a). The 2010 population density of Clark County (247.3 persons per square mile) was ten times greater than the population density of Nevada (24.6 persons per square mile) (USCB 2012b).

Income

Table 3.13-2 provides data on income for the two ROI counties and for California and Nevada, including median household and per capita incomes and percent of the population living below the poverty level. In 2006 to 2010, the median household income for the United States was $51,914. San Bernardino County's median household income was 107.6 percent of the United States average while Clark County's income was 108.4 percent of the national average.

Table 3.13-2. Median Household Income for the ROI

Area	Median Household Income 2006-2010 (2010 dollars)	Per Capita Income 2006-2010 (2010 dollars)	Persons Below Poverty Level (percent)
California	$60,883	$29,188	13.7
San Bernardino County	$55,845	$21,867	14.8
Nevada	$55,726	$27,589	11.9
Clark County	$56,258	$27,422	11.7

Source: USCB 2012b

In 2010, Clark County had higher income levels, in particular per capita income, and lower poverty levels than San Bernardino County. The median household and per capita income in San Bernardino County were both well below the California average, while for Clark County they were close to the Nevada average.

Employment and Economic Activity

Table 3.13-3 shows the size of the labor force, current employment levels, and the number of unemployed for the ROI.

Table 3.13-3. Labor Force, Employment, and Unemployment by Area

Area	As of December 2011			Unemployment (percent)	
	Labor Force	Employed	Unemployed	December 2011	December 2010
San Bernardino County, CA	859,600	756,900	102,600	11.9	13.7
Clark County, NV	942,225	822,726	119,499	12.7	15.1

Sources: California Employment Development Department (CEDD) 2012; Nevada Department of Employment, Training, and Rehabilitation (NDETR) 2012

San Bernardino saw a reduction of 1.8 percent in its unemployment rate between December of 2010 and 2011, while Clark County saw a reduction of 2.4 percent during the same period. However, the unemployment rate in Clark County remained higher than in San Bernardino County.

Economy

Table 3.13-4 shows the structure of the workforce for San Bernardino and Clark counties. In San Bernardino County, educational services, health care, and social assistance were the largest employment sectors (22.7 percent). In Clark County, well over a quarter of the civilian workforce (29.1 percent) is employed in the arts, entertainment, and recreation, accommodation, and food services industry (see Table 3.13-4). Las Vegas and Clark County comprise a major tourist and resort destination nationally and internationally.

Table 3.13-4. Civilian Workforce by Industry Sectors (2010)

Industry	San Bernardino County	%	Clark County	%
Civilian employed population 16 years and over	791,365		872,794	
Agriculture, forestry, fishing and hunting, and mining	7,431	0.9	3,309	0.4
Construction	59,904	7.6	56,744	6.5
Manufacturing	82,634	10.4	29,212	3.3
Wholesale trade	30,002	3.8	17,698	2.0
Retail trade	100,778	12.7	100,242	11.5
Transportation and warehousing, and utilities	56,472	7.1	39,735	4.6
Information	11,514	1.5	14,636	1.7
Finance and insurance, and real estate and rental and leasing	42,668	5.4	55,671	6.4
Professional, scientific, and management, and administrative and waste management services	67,683	8.5	96,050	11.0
Educational services, and health care and social assistance	179,358	22.7	124,884	14.3
Arts, entertainment, and recreation, and accommodation, and food services	70,290	8.9	254,286	29.1
Other services, except public administration	36,043	4.6	41,909	4.8
Public administration	46,588	5.9	38,418	4.4

Source: USCB 2012c

Housing

The quantity and quality of the existing housing stock, particularly the availability of temporary accommodations in the vicinity of the project area, are necessary to assess the impact of immigration of temporary workers or permanent employees to the ROI. Table 3.13-5 shows the total number of vacant housing units and vacancy rates, as well as vacancy rates for rentals, within the ROI. The distribution of vacant housing units by type is shown in Table 3.13-6.

Table 3.13-5. Vacancy Rates and Total Vacant Units (2010)

Area	Vacancy Rate, Housing Units	Number of Vacant Units	Vacancy Rate, Rentals
San Bernardino County, CA	12.6%	88,019	8.7%
Clark County, NV	14.9%	124,978	13.3%

Source: USCB 2012a

Table 3.13-6. Distribution of Vacant Housing Units by Type (2010)

Area	Total Vacant	For rent	Rented, not occupied	For sale only	Sold, not occupied	For seasonal, recreational, or occasional use	All other vacant
San Bernardino County, CA	88,019	21,892	1,096	12,138	2,520	34,104	16,269
Clark County, NV	124,978	47,504	1,291	26,963	2,277	22,002	24,941

Source: USCB 2012a

Public Services

Physical impacts to public services and facilities are usually associated with population in-migration and growth in an area, which increase the demand for particular services, leading to the need for expanded or new facilities. Therefore, public services data are provided below for both San Bernardino County and Clark County.

Police Protection

The project site is located within the jurisdiction of the San Bernardino County Sheriff's Department, which is headquartered at 655 East 3rd Street in San Bernardino. The nearest sheriff's office to the proposed facility site is the Barstow Station in the City of Barstow located at 225 East Mountain View Road (San Bernardino County Sheriff 2012). The California Highway Patrol (CHP) is the primary law enforcement agency for California highways and roads (CHP 2012). CHP services include law enforcement, traffic control, and accident investigation. The closest CHP area office is located at 300 East Mountain View Road in Barstow.

The Las Vegas Metropolitan Police Department (LVMPD) provides police protection services. The LVMPD is a joint city/county police force with nearly 2,900 sworn officers providing law enforcement services for all of Clark County, including the City of Las Vegas, (LVMPD 2011).

Schools

The proposed Stateline Solar Farm Project site is located within the Baker Valley Unified School District (BVUSD). Clark County School District (CCSD) provides school services to the Nevada portion of the ROI. Table 3.13-7 shows current school enrollment figures within the ROI for the 2010–2011 school years. The BVUSD has a small student enrollment, while the CCSD serves a large number of students.

Table 3.13.7. Enrollment Figures for BVUSD and CCSD, Year 2010-2011

Student Level	Baker Valley Unified School District	Clark County School District
Kindergarten	18	23,817
Elementary School (1st through 5th Grade)	65	122,178
Middle School (6th through 8th Grade)	46	72,726
High School (9th through 12th Grade)	53	91,347
Total	*182*	*310,068*

Source: ED-Data 2012; Nevada Department of Education 2010.

Hospitals

The closest hospital with an emergency room to the proposed Stateline Solar Farm Project site is Saint Rose Hospital - Siena Campus in Henderson, Nevada (within Clark County) located at

3001 St. Rose Parkway, approximately 40 miles east of the proposed site. This hospital has 219 beds. The Saint Rose Hospital system has over 3,300 employees and approximately 1,300 physicians at all three campuses (SRDH 2012). The emergency room at Saint Rose Hospital – Siena Campus is designated as a Level III trauma center that provides immediate, specialized care to accident victims and victims of sudden illness. Specialty services at the hospital include intensive care unit, emergency/trauma, labor and delivery, cardiac care, orthopedics, and surgery.

Local Tax Revenues and Sources of Funding

The two key taxing agencies in the ROI are San Bernardino County, California, and Clark County, Nevada. Table 3.13-8 presents the main sources of public revenues for San Bernardino and Clark counties. Total revenues for San Bernardino County amounted to $3.5 billion in 2011. San Bernardino's main sources of revenues were derived from operating grants and contributions and from charges for services.

Revenues for Clark County totaled $4.3 billion in 2011. Most of Clark County's revenues were derived from user fees (charges for services) and ad valorem (property) taxes.

Table 3.13-8. Local Tax Revenues and Sources of Funding, 2011

Revenue Source	San Bernardino County	%	Clark County	%
Charges for Services	857,705,000	26.4	1,798,634,263	42.2
Operating Grants and Contributions	1,584,340,000	48.7	597,327,951	14.0
Capital Grants and Contributions	30,495,000	0.9	241,238,784	5.7
Ad valorem taxes	508,480,000	15.6	601,451,492	14.1
Consolidated tax	121,623,000	3.8	404,036,310	9.5
Sales and use tax	19,184,000	0.6	231,649,479	5.4
Other	130,322,000	4.0	388,176,990	9.1
Total Revenues	3,252,149,000	100	4,262,515,269	100

Sources: Clark County 2012b, San Bernardino County 2011b.

Income Inequality

Distribution of income wealth is an economic indicator for community identity. One measure of income inequality is the Gini index, with values ranging from 0 to 1. A value of 1 indicates perfect inequality where all wealth would be concentrated in a single household. By contrast, 0 would indicate perfect equality where all households have equal income. San Bernardino County has an index value of 0.422 and Clark County a value of 0.434. The national county average is 0.430. By contrast, New York County (Manhattan), New York has an index of 0.601, indicating great income disparity (USCB 2012d).

3.13.2 Applicable Regulations, Plan, and Standards

Compliance with the following federal, state, and local regulations, plans, and standards related to the social and economic effects from the proposed project are required as part of the project development.

Federal

NEPA – (40 CFR 1508(b); 40 C.F.R. 1508.14 of CEQ NEPA Regulations)

An EIS must include the analysis of the proposed project's social and economic effects related to the effects on the natural or physical environment in the affected.

State

California Environmental Quality Act (CEQA) – (California Code of Regulations, Chapter 3, Guidelines for Implementation of CEQA, Article 9(a), Section 1513)

CEQA states:

(a) "Economic or social effects of a project shall not be treated as significant effects on the environment….The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on the physical changes."

(b) "Economic or social effects of a project may be used to determine the significance of physical changes caused by the project…Where an EIR uses economic or social effects to determine that a physical change is significant, the EIR shall explain the reason for determining that the effect is significant."

(c) "Economic, social, and particularly housing factors shall be considered by public agencies together with technological and environmental factors in deciding whether changes in a project are feasible to reduce or avoid the significant effects on the environment identified in the EIR."

Local

San Bernardino County

The General Plan for the San Bernardino County calls for a vibrant and thriving local economy that spans a variety of industries, services, and other sectors while recognizing the distinctions between the growth stages of the Valley, Mountain, and Desert Planning Regions in encouraging industrial, office, and professional development and local-serving employment (County of San Bernardino, 2011a). The proposed project is within the Desert Planning Region and includes a Housing Element that outlines the goal and policies for housing (County of San Bernardino, 2011a).

Goal D/H 1. Encourage a diversity of housing types that will accommodate all individuals and families from all income levels.

Policy D/H 1.1 Encourage the application of the Housing Incentive Programs to clustered development, single family and multiple families, in the Desert Region.

Policy D/H 1.2 The following methods of housing types and design shall be permitted in the Desert Region to augment and contribute to the supply of affordable housing provided they are compatible with the rural character and desert environment:

1. Single-section manufactured home parks that are located within the Alternate Housing Overlay.
2. Accessory residential structures.

The San Bernardino County General Plan is not applicable to projects located entirely on Federal lands.

3.14 Soil Resources

This section describes the existing geology, soils, and seismicity in the Stateline Solar Farm Project area. The discussion includes consideration of local topography, geologic units and features, soil resources, and regional seismicity. Geologic and seismic hazards that could potentially affect the structures associated with the Stateline Solar Farm project are identified. Federal, State, and local laws, regulations, plans, and policies related to geologic and seismic considerations are also discussed.

3.14.1 Environmental Setting

Regional Geological Setting

The Stateline Solar Farm project site is located on the eastern side of the California portion of the Mojave Desert close to the Nevada state line. The project site is located in portions of sections 12, 13, 14, 15, 22, 23, 24, 25, 26, 34, and 35, Township 17 North, Range 14 East, San Bernardino Base and Meridian on the Ivanpah Lake, California 7.5 inch USGS topographic quadrangle map (First Solar 2011).

The project site is located within the Mojave Desert geomorphic province (California Geological Survey 2006), and the solar farm site is in the northeast corner near the boundary with the Basin and Range geomorphic province. The Mojave Desert geomorphic province includes several isolated mountain ranges separated by desert valleys with enclosed drainages and playas. The topography of this province is controlled by a prominent northwest-southeast trending fault system and a secondary east-west trending fault system (California Geological Survey 2002). The mountain ranges are composed of complexly faulted and folded crystalline, metamorphic, volcanic, and carbonate basement rocks that range in age from pre-Cambrian to Mesozoic. Volcanic and sedimentary rocks deposited in the Cenozoic are also found throughout the province (California Geological Survey 2010a).

Younger faulting in the eastern half of the Mojave Desert geomorphic province is characterized by generally north- to northwest-trending normal faults associated with regional extension in the Great Basin. Detachment faults, which are large-scale normal listric faults that flatten at depth, are common in the eastern Mojave Desert of California and Southern Nevada. Thick, nearly flat-lying breccia zones that juxtapose rocks on a regional scale have been identified as the deep portions of these detachment faults, and attest to the depth of erosion in the region. Localized right-lateral strike-slip movement associated with the normal faulting is common in the eastern Mojave Desert. Extensional tectonics is predominant in the Great Basin geomorphic province to the north, although some northwest-striking right-lateral strike-slip faulting, which may or may not be associated with normal faulting, is present. Rapid subsidence has occurred in pull-apart basins, such as the Death Valley depression, in response to strike-slip faulting (Norris and Webb 1990; Wright and others 1999). Strike-slip tectonics may also be partially responsible for the development of Shadow Valley, located southwest of the Clark Mountain Range, during the Miocene (Prave and McMackin 1999).

Geology in the Clark Mountain Range, located west of the Stateline Solar Farm site, is characteristic of both the Mojave Desert and Great Basin geomorphic provinces. A major thrust fault, the Keystone Thrust, which was active in the late Jurassic to early Cretaceous, has juxtaposed Paleozoic marine carbonate sediments over rocks typical of a continental setting (USGS 2006). The Mesozoic age (Cordilleran orogeny) thrust fault relationship is characteristic of the Basin and Range geomorphic province (USGS 2006; Norris and Webb 1990). The southernmost occurrence of these basin fill sediments that is in thrust fault contact

over continental rocks occurs in the Clark Mountain Range. Mesozoic granitic, metamorphic, volcanic and sedimentary rocks in the Mojave Desert to the southwest are more typical of a magmatic arc tectonic setting.

The Clark Mountain Range, which reaches an elevation of 7,930 feet, is bounded on the west side by the Halloran Hills Detachment Fault (Fowler and Calzia 1999). The core of the range has remained unaffected by regional extension. The Kingston Range to the west and the McCullogh Mountains to the east, however, have been affected by extension and detachment faulting that has been dated as Miocene age between 16.5 and 11.0 million years (USGS 2006). The Clark Mountain Range appears to be a high-standing, partially detachment fault-bounded, undeformed zone that remained after major east- and west-directed detachment faulting occurred. The adjacent Ivanpah Valley, with a lakebed elevation of 2,602 feet could be primarily a product of the same relatively recent regional extension and normal listric faulting.

Speculation that Shadow Valley, located on the opposite side of the Clark Mountain Range from Ivanpah Valley, is a Miocene basin that developed in partial response to strike-slip faulting (Prave and McMackin 1999) complicates the picture. The Pahrump Valley Fault Zone and the Stateline Fault, which are interpreted to have a strike-slip sense of motion, border the east side of Ivanpah Valley. Strike-slip faulting, therefore, could be partly responsible for the formation of Ivanpah Valley, although extensional tectonics remains the primary factor.

Local Geological Description of the Stateline Project Site

The following discussion of the Stateline Solar Farm site encompasses geologic conditions applicable to the Proposed Action and the other action alternatives. The project site is located on the west side of the Ivanpah Valley on a broad alluvial bajada deposited on the eastern flank of the Clark Mountain Range, and is adjacent to the north-northwestern side of Ivanpah Dry Lake. Portions of the project study area encompass portions of the Ivanpah Dry Lake. Clasts of alluvial and fluvial origin are predominantly composed of pre-Cambrian to Mesozoic granitic, metamorphic, and carbonate rocks derived from sources in the mountain ranges located to the north and west (USGS 2006). The Quaternary sediments overlie rocks of similar age and composition to the source rocks in the Clark Mountain Range. Outcrops of carbonate (Limestone Hill) and metamorphic rocks (Metamorphic Hill) are located to the west of the Stateline Solar Farm site, indicating that alluvial fan sediments are relatively thin in the project study area.

Soils

Two soil map units are present on the proposed project site and three additional soil map units are located adjacent to the site, according to the U.S. Department of Agriculture's (USDA's) Natural Resources Conservation Service Web Soil Survey (USDA 2012). The predominant soils in the project area are alluvial Arizo Series loamy sands derived from metamorphic and sedimentary rock that form on fan aprons, remnants, and drainages. The northern portion of the site is covered by the Colosseum association soils. The Colosseum Series soils are fine sandy loams underlain by gravelly sandy loams and are derived from limestone and dolomite and form on fan remnants, skirts, and drainages (USDA 2012).

Soil map units in the immediate vicinity of the project site include the Copperworld association (derived from metamorphic rock) on the range to the southwest of the project area, the Umberci-Rock outcrop association (derived from limestone and dolomite) on the range to the north of the project area, and Typic Haplosalids (lacustrine sediments derived from volcanic and sedimentary rock) located in the Ivanpah Dry Lake to the east of the project area (USDA 2012). The soils on and surrounding the project site are depicted in Figure 3.14-1.

In June 2008, Geosphere Consultants, Inc. conducted a geotechnical study of the proposed project site for Optisolar, Inc. (subsequently acquired by First Solar). During the geological field survey, Geosphere Consultants made 13 shallow exploratory borings to a maximum depth of 9 feet below the ground surface. The geologic materials encountered in the borings were visually classified according to the United Soil Classification System. Eleven borings were classified as "Qal" consisting of young alluvial fan deposits from two distinct fan units. These soils occupy the majority of the project site and "consist of fine to coarse sand and silty sand, with varying amounts of gravel and cobbles" (Geosphere Consultants 2008). Grain size in the alluvial fan units becomes finer as the fan approaches the Ivanpah Lakebed. One boring (boring 5) was classified as "Ql" consisting of Quaternary lakebed deposits and one (boring 3) was classified as both Qal and Ql. According to Geosphere Consultants, "[t]he central portion of the site is composed of lakebed deposits associated with Ivanpah Lake" (Geosphere Consultants 2008). The lakebed deposits consisted of "sandy clay to sandy silt, which varied from dry at the surface to damp at a depth of three feet" (Geosphere Consultants 2008).

Other soil and alluvial units Geosphere Consultants classified on the project site include artificial fill (Qaf), young alluvial stream deposits (Qya), colluvium deposits (Qcol), and older alluvial fan deposits (Qc). Artificial fill is found on and around roadways, earthen berms, and railways within the project site. Young alluvial stream deposits are found within observed active natural drainages (generally consistent with the mapped alluvial fans) on the site and consist of "silty sand and sandy gravel, with varying content of coarse sand, gravel, and cobbles" (Geosphere Consultants 2008). Colluvium deposits (consisting of rock fragments 3 to 4 inches in size) are found on and around the Precambrian bedrock outcrop southwest of the project area. Older alluvial fan depositions include Pleistocene nonmarine sediments from the Clark and Lucy Gray Mountains located west and east of the site respectively. Two distinct older fan deposits were identified based on clast type and matrix composition. The upper 3 to 6 inches of these deposits are blanketed by a desert pavement consisting of manganese and iron oxidized coatings (Geosphere Consultants 2008).

The majority of the soils on the project site have a low potential for expansion and a low concentration of water-soluble sulfates. The lakebed soils (Ql) have a high expansion potential and a high concentration of sulfates. Laboratory testing indicates the lakebed soils also have the potential to be mildly to extremely corrosive for ferrous metals in contact with these soils (Geosphere Consultants 2008).

Geology

The mountain range to the north of the project site and the rock outcrop adjacent to the southwestern project corner are composed of Paleozoic and Precambrian metamorphosed sedimentary rock and crystalline bedrock. These units underlie the site "at considerable depth" (Geosphere Consultants 2008).

Two small bedrock hills are located adjacent on the alluvial fan to the west of the project study area. All literature sources agree that the small ridge of carbonate rocks (Limestone Hill) is Paleozoic in age, and the hills composed of metamorphic rocks (Metamorphic Hill) are early pre-Cambrian to Cambrian in age (CDMG 1961; CDMG 1967). Jennings (CDMG 1961) maps the carbonate rocks as undivided marine limestone and dolomite of either the Riggs Formation, which occurs only in the Silurian Hills to the northwest beyond the Clark Mountain Range, or the early Cambrian to Devonian Goodsprings Dolomite. Exposures of the Goodsprings Dolomite, which is described as a dark gray, fine-grained, thick-bedded and locally mottled dolomite (CDMG 1961; CDMG 1967), are abundant in the Clark Mountain Range several miles north of the project site (CDMG 1967). The unit generally lacks fossils, except for echinoderm plates. McCleod (2007) speculates that the carbonate bedrock belongs to the Mississippian age Monte Cristo Limestone or Pennsylvanian age Bird Spring Formation. Both units are mapped in the

Clark Mountain Range to the north (CDMG 1961; CDMG 1967). The basal portions of the Bird Spring Formation and certain members of the Monte Cristo Limestone contain abundant marine fossils. The lack of fossils in the outcrop near the project site makes positive determination of the age and formation of the rocks difficult.

Site-Specific Geologic Hazards Description

The primary geologic hazards at the Stateline Solar Farm project site include ground shaking and faulting related to seismic activity; liquefaction; settlement due to compressible soils, subsidence; hydrocompaction; dynamic compaction; and the possible presence of expansive clay soils. The potential hazards can be effectively mitigated through facility design as required by the California Building Code (2007).

The geotechnical survey conducted by Geosphere Consultants in 2008 considered some of the potential geologic hazards that could occur at the project site. Review of the geotechnical report and independent research (including review of available geologic maps, reports, and databases) indicate that the possibility of geologic hazards affecting the operation of the solar farm during its practical design life is low. However, an expanded, site-specific geotechnical investigation should be conducted to more thoroughly investigate the on-site geologic conditions.

Faulting and Seismicity

The Mojave Desert Province of southern California, in which the solar farm project site is located, is a seismically active area of regional strike-slip faulting and extensional tectonics. The BLM reviewed the Alquist-Priolo Special Studies Zone map database (California Geological Survey 2010b) and the *Fault Activity Map of California* (California Geological Survey 2010c). The project site does not lie within an earthquake fault zone as defined by the Alquist-Priolo Act of 1972 (California Geological Survey 2010b) and no active faults are shown on published maps as crossing the project site boundary.

A review of published geologic maps indicates that three faults are located in the Ivanpah Valley area, although none of these faults is currently considered active. To the east of the project site is the Quaternary Stateline fault that trends northwest-southeast roughly parallel to the California-Nevada state line. This fault is mapped as concealed beneath the alluvial deposits in the valley (California Geological Survey 2010c). The Stateline Fault has been interpreted to be a right-lateral strike-slip structure with some vertical movement (USGS 2006). This fault has had movement in the early to middle Pleistocene (700,000 to 1,600,000 years) (California Geological Survey 2010c). The fault borders the east side of Ivanpah Valley, and crosses the valley north of the solar farm project site. Several small older faults are located within the range of mountains north of the project area, and the Ivanpah Fault is located several miles to the west (California Geological Survey 2010a). No known recent surface rupture has been associated with any of these faults; however because several of these faults are potentially active, moderate ground shaking could occur at the solar farm project site as a result of earthquakes on any of these faults or as a result of regional earthquake activity.

The closest active faults to the project site are the Death Valley and Garlock Faults in California located approximately 50 miles to the west (Geosphere Consultants 2008). Movement on the north-northwest-striking Death Valley Fault is normal, and is related to extensional tectonics in the Great Basin, coupled with right-lateral strike-slip, related to San Andreas-style transform faulting. The Garlock Fault is a major east-west-striking, left-lateral strike-slip fault, also associated with regional transform faulting to the west (California Geological Survey 2010c).

The proposed project site does not lie within a designated earthquake fault zone as defined by the Alquist-Priolo Act of 1972 and no faults have been mapped within the project area

(California Geological Survey 2010b). The site is located in Seismic Risk Zone 4. The potential for ground rupture at the site remains low; there are no active faults on the project site and both the Stateline and the Ivanpah faults are several miles distant from the site. *Although* ground acceleration from rupture of the Stateline fault system could be fairly high, the low occupancy of the project site *indicates that* the risk to human life and safety is low, even if a major earthquake were to occur along the Stateline fault. The construction and design of buildings storing hazardous materials would meet the seismic requirements of the Uniform Building Code and the California Building Code. No on-site bulk storage of chemicals is expected (First Solar 2011).

Liquefaction

Liquefaction generally occurs in fine- to medium-grained saturated, loose granular (particularly sandy and also silty) soils during or after strong seismic ground shaking. Strong seismic ground shaking shifts the granular soils causing densification of the soils. The densification results in an increase in the internal pore pressure causing the soil to liquefy and loose shear strength. This generally occurs within *areas of shallow groundwater and within* the upper 40 to 50 feet of soil because at deeper depths the intergranular pressure is higher. Liquefaction of the soils can induce lateral spreading of the soils, sand boils, lurching, and aerial and differential settlement and can therefore cause loss of foundation support for overlying structures.

Dynamic Compaction

The vibration associated with seismic ground-shaking events can cause dynamic compaction of unconsolidated granular materials in soils. As described above, the vibration causes a decrease in soil volume and a corresponding increase in soil density, as the soil grains are rearranged by the shaking. The decrease in volume can result in settlement of overlying structures. An expanded geotechnical investigation could determine the potential for and mitigation of the effects of dynamic compaction of site soils during an earthquake.

Hydrocompaction

Young soils that were deposited rapidly in a saturated state (often by a flash flood) may be subject to hydrocompaction (also known as hydro-collapse). Such soils dry quickly leaving an unconsolidated, low density deposit with a high percentage of voids. Foundations built on these types of compressible materials can settle excessively, particularly when landscaping irrigation or other soil saturation dissolves the weak cementation of the soil structure. An expanded geotechnical investigation could determine the potential for and mitigation of the effects of hydrocompaction of site soils.

Subsidence

Local subsidence in the form of sinkholes has been observed along the northern edge of Ivanpah Dry Lake near the solar farm project site. Subsidence and sinkholes can be attributed to a number of causes, and the specific cause of this subsidence in Ivanpah Valley was evaluated by the groundwater consultant for the developments in Primm, Nevada (Broadbent 2009). In this case, Broadbent concluded that dehydration of clays between the soil surface and the water table that can result in a major loss of volume, and thus the collapse of overlying soils is believed to be the cause (Broadbent 2009). Broadbent also considered the potential for groundwater extraction and lowering of the water table associated with the Primm Casino and/or Primm Valley Golf Course wells to have caused the subsidence. However, the report concluded that the groundwater extraction was not the cause for two reasons. First, the amount of drop in

the water table in the area is in the range of 5 feet, and this is much lower than the amount of drop observed in other locations where groundwater extraction is known to have resulted in subsidence. The second observation in the Broadbent (2009) report is that the area of subsidence is located more than 3 miles from the Primm Casino and Primm Valley Golf Course wells. An expanded geotechnical survey could assess the potential for and mitigation of the effects of consolidation settlement at the site. Subsidence may occur when human settlements draw down desert aquifers faster than the aquifers can replenish (Sneed and Brandt 2007).

Expansive Soils

Soil expansion occurs when clay-rich soils with an affinity for water exist in-place at a moisture content below their plastic limit. The addition of moisture (from irrigation, capillary tension, water line breaks, etc.) causes an increase in the overall volume of the soil as the clays collect water molecules in their structure. This increase in volume can correspond to expansion of the soil and can result in movement of overlying structural improvements. An expanded geotechnical survey can determine the potential for and mitigation of the effects of expansive soils on the site.

Landslides

The project site and surrounding area is generally flat with the exception of the range to the north and the rock outcrop to the southwest. No evidence of landslide activity was identified on the project site during the geotechnical survey or during review of the published literature and aerial photographs (Geosphere Consultants 2008).

3.14.2 Applicable Regulations, Plan, and Standards

3.14.2.1 Federal

Federal Land Policy and Management Act of 1976 as Amended (FLPMA). The FLPMA establishes policy and goals to be followed in the administration of public lands by the BLM. The intent of FLPMA is to protect and administer public lands within the framework of a program of multiple-use and sustained yield, and the maintenance of environmental quality. Particular emphasis is placed on the protection of the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources and archaeological values.

California Desert Conservation Area (CDCA) Plan. The CDCA Plan defines multiple-use classes for BLM-managed lands within the CDCA, which includes land area encompassing the proposed Stateline site. With respect to geological resources, the CDCA Plan aims to maintain the availability of mineral resources on public lands for exploration and development. *Impacts to soil resources are addressed within several elements of the CDCA Plan, including wildlife, vegetation, range, recreation, motorized-vehicle access, and geology, energy, and minerals. Also, Chapter 6 of the CDCA Plan addresses studies, inventories, and monitoring of soils to support the objectives of the Plan.*

3.14.2.2 State

International Building Code. The 2006 International Building Code (IBC) is a model building code developed by the International Code Council (ICC) that sets rules specifying the minimum acceptable level of safety for constructed objects such as buildings in the United States. As a model building code, the IBC has no legal status until it is adopted or adapted by government

regulation. California has adopted the IBC. The IBC was developed to consolidate existing building codes into one uniform code that provides minimum standards to ensure the public safety, health and welfare insofar as they are affected by building construction and to secure safety to life and property from all hazards incident to the occupancy of buildings, structures and premises. With some exceptions, the California Building Code discussed below is based on the IBC.

California Building Code. The California Building Code (California Building Code 2007) includes a series of standards that are used in project investigation, design and construction (including grading and erosion control). The California Building Code 2007 Edition is based on the 2006 ICB as published by the International Code Council, with the addition of more extensive structural seismic provisions. Chapter 16 of the California Building Code contains definitions of seismic sources and the procedure used to calculate seismic forces on structures.

Alquist-Priolo Earthquake Fault Zoning Act. The Alquist-Priolo Earthquake Fault Zoning Act of 1972 regulates development and construction of buildings intended for human occupancy to avoid the hazard of surface fault rupture. This act provides mitigations against surface fault rupture of known active faults beneath occupied structures, and requires disclosure of the presence of any seismic faults to potential real estate buyers and a 50-foot setback for new occupied buildings. The Alquist-Priolo Earthquake Fault Zoning Act helps define where fault rupture is most likely to occur. This act groups faults into categories of active, potentially active and inactive.

Seismic-Hazards Mapping Act. The Seismic Hazards Mapping Act of 1990 directs the California Geological Survey to delineate seismic hazard zones. The purpose of this act is to reduce the threat to public health and safety and to minimize the loss of life and property by identifying and mitigating seismic hazards. These seismic hazards include areas that are subject to the effects of strong ground shaking such as liquefaction, landslides, tsunamis and seiches. Cities, counties, and state agencies are directed to use seismic hazard zone maps developed by the California Geological Survey in their land use planning and permitting processes. This act requires that site-specific geotechnical investigations be performed prior to permitting most urban development projects within seismic hazard zones.

3.14.2.3 Local

San Bernardino County General Plan and Development Code. The County's General Plan mandates compliance with a number of development standards, including safety requirements. The county also incorporates standards and provisions established by the California Building Code (2007). The San Bernardino County General Plan is not applicable to projects on Federally-owned public lands.

3.15 Special Designations

3.15.1 Environmental Setting

This section describes the special designations in and around the proposed Stateline Solar facility (Proposed Action or Project) project site. The following discussion addresses existing special designations in the proposed facility area, and existing laws and regulations relevant to special designations.

3.15.1.1 Regional Setting

The Proposed Action would be located in the Ivanpah Valley in northeastern San Bernardino County. The project site is located within the CDCA, but is not otherwise in an area specially-designated by BLM. The proposed facility site is located within one mile of the Stateline Wilderness and the Mesquite Wilderness, and approximately two miles west of the Ivanpah DWMA. The proposed facility would be visible from these special land use areas. Figure 3.15-1 displays these specially designated areas in relation to the project site.

3.15.1.2 Project Setting

The Project would be located entirely on BLM-administered lands in Ivanpah Valley. A new high-voltage transmission line, known as the Eldorado-Ivanpah Transmission Project (EITP) is currently under construction, and will cross the proposed site. Undeveloped range land is currently present on the proposed facility location. Additionally, three BLM rough bladed or two-tracked surface roads cross the proposed site. Current and historic uses of the proposed site include open space, off-road recreational vehicle activities, hunting, hiking, and camping. The proposed facility would be located in the Mojave Desert bioregion. Onsite vegetation consists of Mojave creosote bush scrub, Desert saltbush scrub, and Dry lake bed/playa habitat.

3.15.1.3 Areas of Critical Environmental Concern (ACEC) and Desert Wildlife Management Area (DWMA)

The BLM uses the ACEC designation to highlight public land areas where special management attention is necessary to protect and prevent irreparable damage to: important historical, cultural, and scenic values; fish or wildlife resources; or other natural systems or processes. The ACEC designation may also be used to protect human life and safety from natural hazards. The BLM identifies, evaluates, and designates ACECs through its resource management planning process. Allowable management practices and uses, mitigation, and use limitations, if any, are described in the planning document.

A DWMA is a type of ACEC specifically designated for the protection of wildlife resources. The establishment of DWMAs for the protection of desert tortoises was recommended in the Desert Tortoise (Mojave Population) Recovery Plan (USFWS 1994).

Ivanpah DWMA. The 37,280 ac Ivanpah DWMA is located approximately two miles to the east of the proposed Project. The Ivanpah DWMA is managed by BLM, and was established through the 2002 NEMO, an amendment to the CDCA Plan. The DWMA was established in response to the listing of the desert tortoise as threatened under the state and Federal Endangered Species Acts, designation of critical habitat for the desert tortoise, and publication of the 1994 *Recovery Plan for Desert Tortoise* (USFWS 1994).

The NEMO Plan amendments established the Ivanpah DWMA to encompass the northeastern portion of the Ivanpah Critical Habitat Unit for the desert tortoise in Ivanpah Valley. The northeastern portion of the unit is the portion located to the east of I-15, and portions of the DWMA are located within 2 miles of the proposed Stateline facility.

The proposed Project is located within the 29,110 acre Northern Ivanpah Valley Unit, which was not included within the DWMA. This area is designated BLM Class I desert tortoise habitat, but is not designated as critical habitat by the U.S. Fish and Wildlife Service (USFWS). At the time of the NEMO Plan amendment, this area was not included within the Ivanpah DWMA because it is separated from other desert tortoise populations by Interstate 15 and Ivanpah Dry Lake.

A component of the Proposed Action includes expanding the boundary of the Ivanpah DWMA to include a portion of the Northern Ivanpah Valley Unit *into* the *existing* DWMA. The portion proposed to be included in the DWMA would be comprised of the area of the unit which is not currently under development or consideration for development (i.e., the entire unit without the land area of the Ivanpah SEGS facility, Joint Port of Entry, or the proposed Project. If both the solar facility ROW grant and the modified DWMA are implemented, then the Proposed Action would be located directly adjacent to, and surrounded on all sides by, the DWMA.

Mesquite Lake ACEC. The Mesquite Lake ACEC, managed by BLM, is located approximately 10 miles to the northeast of the proposed Project, on the other side of the Clark Mountain Range. The ACEC was designated through the CDCA Plan of 1980 to protect archaeological resources. Dense mesquite thickets growing around the periphery of a Pleistocene lakebed represent an excellent subsistence resource to Native Americans exploiting the natural resources of the Mesquite Lake area. The ACEC is 7,251 acres in size.

Clark Mountain ACEC. The Clark Mountain ACEC, managed by the National Park Service, is located approximately 8 miles to the southwest of the proposed solar facility. The ACEC was designated through the CDCA Plan to protect natural and cultural values. The Clark Mountain ACEC has diverse scenic vistas, diverse plant communities, wildlife populations, and cultural resource values. The ACEC is 4,234 acres in size.

3.15.1.4 Back Country Byways

No Back Country Byways are located within the vicinity of the proposed facility.

3.15.1.5 National Recreation Areas

Ivanpah Dry Lake. Although not designated as a national recreation area, the Ivanpah Dry Lake was designated in the CDCA Plan for non-motorized, open-space recreational activities. The BLM issues both Special Recreation Permits and casual use permits for recreational use of the Dry Lake for land sailing and kite buggy use. The Dry Lake is the location of National and International Land Sailing Regattas. Additionally, world speed trials in which land sailing speed records have been set occur on Ivanpah Dry Lake. The Dry Lake is also used for photography and film projects, for both recreational and commercial purposes. Additional recreational activities include long distance bow and arrow target shooting, hang gliding, and model rocket and airplane flying. BLM issues approximately 250 permits per year for recreational activities on the Dry Lake.

Jean Lake/Roach Lake Special Recreation Management Area (SRMA). The proposed facility would be located within a few miles of the 216,300 acre Jean Lake/Roach Lake SRMA, which is located in Nevada on the north side of Primm. The Jean Lake/Roach Lake SRMA was

established in the BLM Las Vegas Resource Management Plan (BLM 1998) for intensive recreation opportunities, including competitive OHV and other recreational events.

3.15.1.6 National Scenic and Historic Trails

The project area does not include any trails designated as National Scenic and Historic Trails. A branch of the Mojave Road, a BLM-designated open route that passes within 2 miles to the southeast of the proposed Project, generally follows the historic route of the Mojave Trail. The Mojave Road is a total of 128 miles long, and passes west from the Yates Well Road exit on I-15 into the Mojave National Preserve.

3.15.1.7 Wild and Scenic Rivers

No wild and scenic rivers are located within the vicinity of the proposed facility.

3.15.1.8 Wilderness Areas

National Wilderness Areas, designated by Congress, are defined by the Wilderness Act of 1964 as places "where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." Designation is aimed at ensuring these lands are preserved and protected in their natural condition. Wilderness Areas, which are generally 5,000 acres or more in size, offer outstanding opportunities for solitude or a primitive and unconfined type of recreation; such areas may also contain ecological, geological, or other features that have scientific, scenic, or historical value.

With some exceptions, commercial enterprises, construction of temporary or permanent roads, use of motorized vehicles and other mechanical transport, aircraft landings, and construction of structures and other installations may not occur in wilderness areas.

Stateline Wilderness. The Stateline Wilderness comprises approximately 7,000 acres at the eastern end of the Clark Mountain Range near Primm. The area includes rugged limestone and Dolomite Mountains with creosote brush and bursage, yucca, Joshua tree, and pinyon-juniper habitat. Recreation uses of the Stateline Wilderness include hiking, camping, rock hounding, photography, and backpacking. The proposed Project would be located 1 mile to the south of the Stateline Wilderness, and would be visible from this area.

Mesquite Wilderness. The Mesquite Wilderness comprises approximately 44,800 acres, including portions of the Mesquite Mountains, Mesquite Valley, and Clark Mountain range. Dominant vegetation types include creosote brush-sage, blackbrush, Joshua tree, and pinyon-juniper. Recreation uses of the Mesquite Wilderness include hiking, horseback riding, camping, rock hounding, photography, and backpacking. The proposed Project would be located 2 mile to the east of the Mesquite Wilderness, and would be visible from the area.

3.15.1.9 Planning Areas

CDCA Plan. The proposed Project would be located in an area governed by the CDCA Plan. The 25 million-acre CDCA is a special planning area administered by the BLM that contains over 12 million acres of public lands within the California Desert, which includes the Mojave, the Sonoran, and a small portion of the Great Basin Deserts. The goal of the CDCA Plan is to provide for economic, educational, scientific, and recreational uses of public lands and

resources in the CDCA in a manner that enhances use without diminishing the environmental, cultural, and aesthetic values of the desert. The CDCA Plan, as amended, identifies solar energy development as an authorized use of public lands, consistent with the Plan and the NEPA. Consequently, public lands located in the CDCA are not restricted from solar energy development.

3.15.1.10 Wilderness Study Areas

No Wilderness Study Areas are located within the vicinity of the proposed facility.

3.15.1.11 Wilderness Inventory

BLM evaluated their 1979 Wilderness Inventory of the project area in 2010 (BLM 2010). The proposed facility location falls within Wilderness Inventory Unit CDCA 226. The access road also passes through Wilderness Inventory Unit 231. In 1979, an evaluation determined that imprints of man were substantially noticeable in both units, and that the area did not have outstanding opportunities for solitude or recreation. The 2010 assessment concluded that additional development had occurred in both units since 1979, including additional underground facilities (pipelines and fiber optic lines), new mining claims, and new designations of "open" on existing routes. Overall, the area was determined to not have the wilderness characteristic of naturalness, and did not have outstanding opportunities for solitude or recreation. *Since the area has no wilderness characteristics, this resource will not be evaluated further in the environmental analysis.*

3.15.1.12 Farmland or Forest Land

Special designations associated with Farmland or forest land, as made by the state, are not applicable on BLM land. Therefore, no designated Prime Farmland, Unique Farmland, or Farmland of Statewide Importance exists within the project area (DOC 2008). No Williamson Act Contract land is present and no forest land designated by the California Department of Forestry and Fire Protection or the United States Department of Agriculture, Forest Service exists on the project site. No Farmland subject to the Farmland Protection Policy Act is present on the project site.

3.15.2 Applicable Regulations, Plan, and Standards

3.15.2.1 Federal

National Landscape Conservation System

The National Landscape Conservation System (NLCS) is the primary management framework for specially designated lands or Special Management Areas (SMAs). In June 2000, the NLCS was created by the BLM to bring some of the agency's premier areas into a single system. The NLCS designations include National Monuments, National Conservation Areas, Designated Wilderness Areas and Wilderness Study Areas, National Scenic and Historic Trails, and Wild, Scenic, and Recreational Rivers. Other special areas managed by the BLM outside of the NLCS framework include ACECs, DWMAs, Research Natural Areas, National Natural Landmarks, National Recreation Trails, and a variety of other area designations.

The BLM manages certain lands under its jurisdiction that possess unique and important historical, anthropological, ecological, biological, geological, and paleontological features. These features include undisturbed wilderness tracts, critical habitat, natural environments, open spaces, scenic landscapes, historic locations, cultural landmarks, and paleontologically rich

regions. Special management is administered with the intent to preserve, protect, and evaluate these significant components of our national heritage. Most special areas are either designated by an Act of Congress or by Presidential Proclamation, or are created under BLM administrative procedures.

3.15.2.2 State

Special designations *made by the State government, including designation of Prime Farmland, Unique Farmland, Farmland of Statewide Importance, Williamson Act Contract land, or Forest Land, are not applicable to projects on BLM land.*

3.15.2.3 San Bernardino County

Special designations made by the County government are not applicable to projects on BLM land.

3.16 Transportation and Public Access

This section describes existing conditions related to transportation and public access, including applicable plans, policies, and regulations. Information contained within this section was provided primarily by the Traffic Study for the Stateline Solar Farm Project, San Bernardino County, California (First Solar 2012m).

Typical construction traffic would consist of trucks transporting construction equipment and materials to and from the site and vehicles of management and construction employees during the construction period. The project site is in a remote area and all materials have to be brought from large distances; personnel would have to travel either from other parts of California or Nevada. All traffic would utilize I-15 for regional travel and the I-15/Yates Well Road Interchange to access the site.

Section 4.16 discusses the transportation and public access impacts that would occur with implementation of the Proposed Action and alternatives.

3.16.1 Environmental Setting

Regional and Local Roadway Facilities

Interstate 15 (I-15). I-15 is a north-south divided freeway linking Los Angeles, California, to Las Vegas, Nevada. I-15 also extends from San Diego, California through Nevada, Utah, Idaho, and Montana. Access from I-15 to the project site is provided via Yates Well Road. At this location I-15 consists of two lanes in each direction.

Yates Well Road. Yates Well Road is a two-lane east-west local road providing direct access to I-15. Yates Well Road primarily provides access from I-15 to the Primm Valley Golf Club, which has two 18-hole golf courses, and to off-road recreation areas in the vicinity of the project site. Yates Well Road also provides access to areas east of I-15; however, it becomes an unpaved roadway approximately 200 feet east of the I-15 northbound ramps. The ramp terminal intersections at the I-15/Yates Well Road Interchange are stop-controlled. No other controlled intersections exist on Yates Well Road in the vicinity of the project site.

Silverton Road. Silverton Road is a two-directional local road located east of and adjacent to the Primm Valley Golf Club. The terminus of Silverton Road will be the primary access point to the project site. The portion of Silverton Road between Yates Well Road and Dalmatia Road is paved, but is not striped and does not have shoulders. The portion of Silverton Road north of Dalmatia Road is an unpaved dirt road.

Sweet Bay Drive. Sweet Bay Drive is a paved extension of Yates Well Road north of Silverton Road. It is an unstriped, two-directional local road that provides access to the Primm Valley Golf Club.

3.16.1.1 Existing Traffic Volumes

Yates Well Road is primarily used by patrons and employees of the Primm Valley Golf Club. In addition, off-road recreation enthusiasts use Yates Well Road to access a number of off-road recreation areas/facilities in the area. Because Yates Well Road primarily serves the Primm Valley Golf Club, the traffic volumes on Yates Well Road would be approximately equal to the vehicle trips generated by the Primm Valley Golf Club. While off-road recreation travel may add one or two vehicle trips to Yates Well Road during the a.m. and p.m. peak hours, it would be insignificant compared to the vehicle trips generated by the patrons and employees of the Primm Valley Golf Club. The trip generation for the golf club was estimated using rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (Eighth Edition; ITE 2008). In order to determine the existing traffic volumes on local roads serving the project site, the vehicle

trips generated by the Primm Valley Golf Club were distributed to I-15 via Yates Well Road and Silverton Road. Figure 3.16-1 shows the existing peak-hour traffic volumes at intersections in the traffic analysis area. The estimated vehicle trips currently generated by the Primm Valley Golf Course, based on the ITE trip rates, are provided in Table 3.16-1.

Table 3.16-1. Primm Valley Golf Club Trip Generation

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rate[1]									
Golf Course		Hole	35.74	1.76	0.47	2.23	1.25	1.53	2.78
Trip Generation									
Primm Valley Golf Club	36	Hole	1,287	63	17	80	45	55	100

Source: First Solar (2011).
[1] Trip rates referenced from the Institute of Transportation Engineers (ITE), Trip Generation Manual, 8th Edition.
ADT = average daily traffic

The California Department of Transportation (Caltrans) and the Nevada Department of Transportation (NDOT) provide traffic volumes for I-15. Table 3.16-2 shows the Caltrans and NDOT traffic volumes for I-15 at the State line (east of the project study area).

Table 3.16-2. Freeway Traffic Volumes

Source	I-15 at the California/Nevada State Line		
	AADT	Peak Hour	Peak Direction
Caltrans	37,000	5,228 (14.13% of AADT)	2,823 (54%)
NDOT	39,000	4,992 (12.8% of AADT)	2,646 (53%)

Sources: http://traffic-counts.dot.ca.gov/2009all/Route12-15i.htm (2009 Caltrans Traffic Count Data); http://traffic-counts.dot.ca.gov/2009kndfactors.pdf (2010 Caltrans Peak Hour Traffic Volume Data); and 2009 Annual Traffic Report, Nevada Department of Transportation.
AADT = annual average daily traffic
Caltrans = California Department of Transportation
I-15 = Interstate 15
NDOT = Nevada Department of Transportation

Annual average daily traffic (AADT) is a commonly-used indicator of the daily traffic volume on a road, averaged over 12 months of the year. The annual average daily truck volume on I-15 at the State line is approximately 6,645 trucks (Caltrans 2012), which is roughly 18 percent of the AADT.

According to the NDOT, the monthly average daily traffic (ADT) on I-15 at the State line ranges from a low of 33,935 vehicles in January to a high of 46,558 vehicles in July. During the course of a typical week, the lowest daily traffic volume of 28,835 vehicles occurs on Tuesdays. The two highest daily traffic volumes occur on Friday and Sunday, with 49,516 ADT and 54,246 ADT, respectively. Therefore, the most conservative estimate of traffic volumes on I-15 can be estimated by applying the Caltrans peak-hour and peak direction factors to the NDOT Thursday and Friday traffic volumes. The NDOT data do not indicate the peak hour or direction. According to Caltrans, the peak hour on I-15 is the p.m. peak hour in the northbound direction. Table 3.16-3 shows the weekday (Thursday) and Friday peak-hour traffic volumes on I-15 that were used in the analysis of potential traffic impacts on the I-15.

Table 3.16-3. Typical Weekday and Friday Peak Hour Traffic Volumes on I-15

	Peak Hour (PM Peak 14.13%)	Peak Direction (54% Northbound)
Typical weekday	4,074	2,200
Typical Friday	6,997	3,778

Sources: http://traffic-counts.dot.ca.gov/2009all/Route12-15i.htm (2009 Caltrans Traffic Count Data); http://trafficcounts.dot.ca.gov/2009kndfactors.pdf (2010 Caltrans Peak Hour Traffic Volume Data); and 2009 Annual Traffic Report, Nevada Department of Transportation.
ADT = average daily traffic
I-15 = Interstate 15

3.16.1.2 Existing Levels of Service

Level of Service Methodology

Level of service (LOS) is a qualitative measure used to describe operational conditions within a traffic stream. LOS is used to describe and quantify the congestion level on a particular roadway or intersection in terms of speed, travel time, and delay.

Intersection LOS

The 2000 *Highway Capacity Manual* (HCM; Transportation Research Board 2000) defines six levels of service for roadways or intersections, ranging from LOS A (the best operating conditions) to LOS F (the worst), corresponding to the number of seconds of delay experienced by drivers at the intersection. Each intersection in the traffic analysis area is controlled by a stop sign in at least one direction. The two I-15 ramp intersections have a stop sign on the I-15 off-ramp. The intersection of Yates Well Road-Sweet Bay Drive/Silverton Road has a stop sign in the southbound direction. At stop-controlled intersections, such as those in the traffic analysis area, the seconds of delay refer to the delay experienced by drivers in the stop-controlled direction(s) only. The relationship between LOS and delay is shown in Table 3.16-4.

Table 3.16-4. Level of Service for Unsignalized Intersections

Level of Service	Unsignalized Intersection Average Delay per Vehicle (seconds)
A	≤10
B	>10 and ≤ 15
C	>15 and ≤ 25
D	>25 and ≤ 35
E	>35 and ≤ 50
F	>50

Source: Highway Capacity Manual (2000)

The County of San Bernardino uses the LOS criteria to assess the performance of its street and highway system and the capacity of roadway segments (County of San Bernardino 2007). The County's Threshold Standards Policy requires that LOS D or better be maintained on intersections under the County's jurisdiction.

Freeway LOS

The freeway LOS on segments of I-15 adjacent to the project site was calculated based on the HCM methodology for Basic Freeway Segments. LOS on a freeway mainline is determined by the density of vehicles on the segment on a passenger-cars-per-mile-per-lane (pc/mi/ln) basis. The calculations were performed using Highway Capacity Software (First Solar 2012m). Table 3.16-5 shows the LOS criteria for freeway segments.

Table 3.16-5. Level of Service Criteria for Freeway Segments

Level of Service	Density (pc/mi/ln) for Basic Freeway Segments Average Delay per Vehicle (seconds)
A	≤11
B	>11 and ≤ 18
C	>18 and ≤ 26
D	>26 and ≤ 35
E	>35 and ≤ 45
F	>45

Source: Transportation Research Board (2000)
pc/mi/ln = passenger cars per mile per lane

Existing Intersection LOS

Existing traffic volumes at local intersections serving the project site were estimated using the methodology described in Section 3.16.1.1. Table 3.16-6 shows the existing LOS at the traffic analysis area intersections. As shown, the three main intersections in the traffic analysis area operate at LOS A during both the a.m. and p.m. peak hours.

Table 3.16-6. Existing Intersection Level of Service

Intersection	AM Peak Hour LOS	PM Peak Hour LOS
Yates Well Road–Sweet Bay Drive/Silverton Road	A	A
I-15 southbound ramp/Yates Well Road	A	A
I-15 northbound ramp/Yates Well Road	A	A

Existing Freeway LOS

Table 3.16-7 shows the existing LOS on I-15 for the weekday and Friday p.m. peak hours. The LOS worksheets are provided in the Applicant's traffic report (First Solar 2012m).

Table 3.16-7. Existing Freeway LOS

	PM Peak-Hour Directional Volume (Northbound)	Density	LOS
Typical weekday	2,200 vehicles	19.0 pc/mi/ln	C
Typical Friday	3,778 vehicles	39.9 pc/mi/ln	E

Source: First Solar 2012m
LOS = level of service
pc/mi/ln = passenger cars per mile per lane

As shown in Table 3.16-7, I-15 operates at LOS C in the northbound direction during the p.m. peak hours on weekdays except for Friday. During the Friday p.m. peak hour, the I-15 operates at LOS E in the peak northbound direction. Caltrans identifies LOS C as the desirable LOS for a freeway mainline. Therefore, the I-15 northbound direction during the Friday p.m. peak hour is currently operating at a deficient LOS.

3.16.2 Project Access

Regional Access

Regional access to project site is via I-15. Adjacent to the project site, I-15 consists of two lanes in each direction. Access from I-15 to the project site is provided via Yates Well Road.

Local Access

Local access for the site would be from Yates Well Road and Silverton Road. The entrance to the site on Yates Well Road would be located approximately 1 mile west of I-15. Silverton Road extends from the northern terminus of Yates Well Road in a northwesterly direction and then runs along the western boundary of the Primm Valley Golf Club. Silverton Road provides access to the center of the site. Yates Well Road provides access to the southern portion of the site. The only access to Yates Well Road is from I-15.

Site Access

The primary access to the project site will be from the terminus of Silverton Road. Additional site access will be provided from Yates Well Road.

Railways

An active Union Pacific Railroad line exists approximately five miles east of the project site.

Public Transportation

No public transit service exists in the vicinity of the project site. Amtrak serves the corridor via bus only, with service between Las Vegas and Los Angeles. Many private bus companies operate on demand for Primm Valley Golf Club customers; but no established regular schedule exists.

Airports

One existing public airport, Jean Airport, is located approximately 15 miles northeast of the project site and one mile south of Jean, Nevada. Jean Airport is owned by Clark County and has two paved runways that serve less than 50 aircraft, most of which are single engine airplanes and gliders (AirNav.com 2012).

McCarran International Airport is located approximately 40 miles northeast of the site in Las Vegas, Nevada. The closest airport in San Bernardino County is the Barstow-Daggett Airport, approximately 100 miles south of the project area.

A new commercial airport, the *Southern Nevada Supplemental Airport*, has been proposed between Jean and Primm, Nevada, and would be approximately 5 miles north of the project study area. The FAA and the BLM began preparation of an Environmental Impact Statement for

the proposed Southern Nevada Supplemental Airport to be constructed on approximately 6,000 acres of land just south of Jean, Nevada. As planned, the proposed Southern Nevada Supplemental Airport would provide sufficient airport capacity to accommodate future aircraft operations and aviation passenger demand in the Las Vegas Metropolitan Area. The Stateline Solar Farm Project would be located approximately 7 miles southwest of the nearest runway at the proposed Southern Nevada Supplemental Airport.

However, the Federal Aviation Administration (FAA) in cooperation with the BLM as Joint Lead Agencies (JLA), pursuant to the Ivanpah Valley Airport Public Lands Transfer Act of 2000 (Public Law 106-362), have suspended preparation of an EIS for the proposed Southern Nevada Supplemental Airport. The FAA and the BLM suspended work on the EIS because the Clark County Department of Aviation advised the JLA that*, due to the economic downturn,* it has reduced the level of effort on planning for the proposed Southern Nevada Supplemental Airport. At this time, FAA and BLM do not know when work will resume on the EIS (FAA 2012).

Bicycle Routes

There are no bicycle routes or facilities such as designated bicycle lanes on the roads discussed in this section.

Public Access

Public access refers to the legal rights of citizens to access public land for certain purposes without barriers or impediments. The affected environment related to public access includes recreational use of land by the public.

The majority of the project study area is open desert land in that is currently used for recreation activities. Recreation activities include camping, off-highway vehicle (OHV) use, and shooting.

3.16.3 Applicable Regulations, Plan, and Standards

Construction of the proposed project could affect access, traffic flow patterns, and parking on public streets and highways. Therefore, it is necessary for the Applicant and/or the construction contractor to obtain encroachment permits or similar legal agreements from the public agencies responsible for the affected roadways and other applicable ROWs. Such permits are needed for ROWs that would be affected by access road construction. For the proposed project, encroachment permits would be issued by Caltrans, San Bernardino County, and other affected agencies and companies.

A general description of adopted federal, state, and local laws and regulations pertaining to traffic and transportation relevant to the proposed project is provided below.

3.16.3.1 Federal

CFR, Title 49, Subtitle B. 49 CFR Subtitle B includes procedures and regulations pertaining to interstate and intrastate transport (including hazardous materials program procedures) and provides safety measures for motor carriers and motor vehicles that operate on public highways.

Bureau of Land Management. On Federal lands managed by the BLM, motorized routes, in addition to roads that are within the state or locally maintained roadway system, are designated for public use through the BLM's CDCA Plan. The majority of these routes are unmaintained. Most routes receive light use and do not have specific policies or regulations governing their use. A few routes that provide access to major use areas or trailheads receive moderate use

and may be hardened or maintained. The CDCA Plan designates roads as open, closed, or limited for vehicle use *in open or limited use areas*. The area designations are made on the basis of multiple-use classes with certain exceptions.

The goal of the Motorized-Vehicle Access Element of the CDCA Plan is to provide a system and set of rules governing access to the CDCA by motor vehicles. The specific objectives in the CDCA Plan are as follows:

- Provide for constrained motorized vehicle access in a manner that balances the needs of all desert users, private landowners, and other public agencies;
- When designating or amending areas or routes for motorized vehicle access, to the degree possible, avoid adverse impacts on desert resources; and
- Use maps, signs, and published information to communicate the motorized vehicle access situation to desert users. Be sure all information materials are understandable and easy to follow.

Four criteria are identified in 43 CFR 8342.1 for consideration when making area and route-specific designation decisions, including:

- *a) Areas and trails shall be located in a manner to minimize impacts to physical resources (soils, watershed, vegetation, air, and other resources) and to prevent impairment of wilderness suitability;*
- *b) Areas and trails shall be located to minimize harassment of wildlife or significant disruption of wildlife habitats. Special attention will be given to protect endangered or threatened species and their habitats;*
- *c) Areas and trails shall be located to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses;*
- *d) Areas and trails shall not be located in officially designated wilderness areas or primitive areas, and shall be located in natural areas only if the authorized officer determines that off-road vehicle use in such locations will not adversely affect their natural, esthetic, scenic, or other values for which established.*

3.16.3.2 State

Caltrans. The use of State highways for other than transportation purposes requires an encroachment permit, Caltrans form TR-0100. This permit is required for utilities, developers, and non-profit organizations for use of the State highway system to conduct activities other than transportation (e.g., landscape work, utility installation, film production) within the ROW. The application would be forwarded to Caltrans District 11, which is where the proposed project is located. The Caltrans Traffic Manual (Chapter 5) provides Traffic Controls for Construction and Maintenance Work Zones. Also, any project requirement to transport oversize or overweight loads would require approval from Caltrans.

California Vehicle Code (CVC), Division 2, Chapter 2.5; Div. 6; Chap. 7; Div. 13; Chap. 5; Div. 14.1; Chap. 1 & 2; Div. 14.8; Div. 15. This code includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials.

California Streets and Highway Code, Division 1, Chapter 3; Division 2 Chapter 5.5. This code includes regulations for the care and protection of state and county highways and provisions for the issuance of written permits.

3.16.3.3 Local

San Bernardino Associated Governments (SANBAG)

- **Regional Transportation Plan.** Identifies public policies and strategies for the transportation system in the San Bernardino County region.
- **SANBAG Congestion Management Plan (CMP).** Requires maintenance of LOS E or better on CMP segments.

San Bernardino County

- **General Plan.** Establishes regional transportation objectives, policies, and implementation measures for various modes of transportation.
- **Threshold Standards Policy.** The County's Threshold Standards Policy requires that LOS D or better be maintained on intersections under the County's jurisdiction.
- **County Code, Title 5, Division 1, Highway Permit**. Addresses permitting requirements for oversize/overweight vehicles.

Because the facility would be located entirely on BLM-managed public lands, the San Bernardino County General Plan*, the Threshold Standards Policy, and the County Code* would not be applicable.

3.17 Vegetation

This section describes the environmental setting with respect to vegetation resources in areas potentially affected by the proposed Stateline Solar Farm project *(Proposed Action or Project)*. The section discusses plant communities; invasive, noxious weeds; special status plant species; and state and federal jurisdictional areas that are located within the project area. Information in this section is largely based on the *Biological Resources Technical Report* (First Solar *2013e and provided as Appendix E*), which includes detailed descriptions of survey methods utilized by the Applicant to identify vegetative resources within the Project Study Area (the 5,850 acre area that was subject to biological resource surveys; see Figure 1-1).

3.17.1 Environmental Setting

The *Project site* is located in the Mojave Desert, which is situated between the Sierra Nevada and the San Gabriel and San Bernardino Mountains to the west and the Great Basin Desert and Colorado Plateau to the east. *Elevations in the project area range from approximately 2,600 to 3,280 feet above mean sea level. The Project Study Area is comprised of, and surrounded by, undeveloped land with desert vegetation.* At lower elevations *of the Mojave Desert*, creosote bush (*Larrea tridentata*) predominates. Vegetation on the site and in the immediate project area consists of primarily Mojave creosote bush scrub. The lowest points in the desert are occupied by playas or alkali sinks, dry lake beds where evaporation leaves wide expanses of soils with high alkalinity or salinity (*see Appendix E;* First Solar *2013e*).

The proposed facility location is not situated within an area specially designated for protection of biological resources*; however, as explained in Section 3.15 it is located near a number of special designated areas*. The site is located approximately two miles west of the Ivanpah Valley DWMA, and one mile south of the Stateline Wilderness Area.

3.17.1.1 Vegetation Communities

The Project Study Area is comprised of three distinct macro vegetation communities (Figure 3.17-1): Creosote Bush-White Bursage Series (Sawyer and Keeler-Wolf 2010; corresponds to Mojave Creosote Bush Scrub in Holland 1986); Mixed Saltbush Series (Sawyer and Keeler-Wolf 2010; similar to Desert Saltbush Scrub in Holland 1986); *and Dry Lake Bed/Playa, which comprises a small portion of the easternmost extent of the primary Project study area*. The majority of the project area consists of the following species: creosote bush, burrobush (*Ambrosia dumosa*), wirelettuce (*Stephanomeria pauciflora*), cheesebush (*Ambrosia salsola*), beavertail cactus (*Opuntia basilaris*), barrel cactus (*Ferocactus cylindraceus*), Mojave yucca (*Yucca schidigera*), and Nevada ephedra (*Ephedra nevadensis*). The eastern portion of the project footprint borders Ivanpah Dry Lake and is comprised of saltbush scrub species such as cattlespinach (*Atriplex polycarpa*), wheelscale (*Atriplex elegans*), and four-wing saltbush (*Atriplex canescens* ssp. *canescens*). All plant species observed within the Study area during the course of field surveys are documented in the *Biological Resources Technical Report* (First Solar *2013e*).

Creosote Bush-White Bursage (Holland Code 34100: Mojave Creosote Bush Scrub)

Mojave creosote bush scrub is a community dominated by creosote bush and few other species. Shrubs are typically widely spaced among expanses of bare ground. An annual herb layer may flower in late March and April when winter rains are sufficient. Other species

commonly found in this habitat includes burrobush, desert senna (*Senna armata*), ephedras (*Ephedra* spp.), and cheesebush. This habitat is usually found on well-drained alluvial or colluvial soils with very low available water holding capacity on slopes, fans, and valleys. The vegetation types that make up a Mojave Creosote Bush Scrub community are widespread throughout the Mojave Desert and comprises over 95 percent of the primary Study area.

The Mojave Creosote Bush Scrub community has a rarity ranking of S4 in the California Department of Fish and Wildlife (CDFW) Hierarchical List of Natural Communities with Holland types (CDFG 2010), and is thus *considered apparently secure within California*.

Mixed Saltbush (Holland Code 36110: Desert Saltbush Scrub)

Desert saltbush scrub is a low, sparse mixture of microphyllous (i.e., small-leaved) shrubs and occasional succulent species. Stands of shrubs are usually widely spaced and are strongly dominated by a single *Atriplex* (saltbush) species. Other species can include spiny hopsage (*Grayia spinosa*), cheesebush, Anderson thornbush (*Lycium andersonii*), and mesquite (*Prosopis* sp.). This habitat usually forms on fine-textured, poorly draining soils with high alkalinity and salinity, usually surrounding playas on elevated ground (Holland 1986). This plant community type is represented by approximately 3 percent of the Study area, located primarily near the Ivanpah Dry Lake.

The Desert Saltbush Scrub community has a rarity ranking of S4 in the CDFW Hierarchical List of Natural Communities with Holland types (CDFG 2010) for Mojave Desert populations.

Dry Lake Bed/Playa (Holland Code 46000)

Dry lake bed/playa habitat is characterized by having low, grayish, microphyllous, and succulent shrubs at low density, and few understory species. This vegetation type typically occurs on poorly drained soils with high salinity or alkalinity due to water evaporation. A high water table and salt deposits are usually present (Holland 1986). Within the study area, examples of this vegetation type are found bordering the Ivanpah Dry Lake and account for less than 1 percent of the total biological resources study area. *The Alkali Playa community has a rarity ranking of S3.2 in the California Department of Fish and Wildlife (CDFW) Hierarchical List of Natural Communities with Holland types (CDFG 2010), and is thus considered a sensitive community.*

3.17.1.2 Invasive, Noxious Weeds

Noxious weeds are species of non-native plants of concern to the California Invasive Plant Council (Cal-IPC) or the BLM. They are of particular concern in undeveloped, natural areas because of their potential to degrade habitat and disrupt the ecological functions of an area (Cal-IPC 2006). Specifically, noxious weeds can alter habitat structure, increase fire frequency and intensity, decrease forage (including for special status species), exclude native plants, and decrease water availability for both plants and wildlife. Soil disturbance creates conditions favorable to the introduction of new noxious weeds or the spread of existing populations. Construction equipment, fill, and mulch can act as vectors introducing noxious weeds into an area.

Of the 194 plant species that were documented during the 2008/2010/2011 special status plant species surveys, nine species were non-native (Baldwin et al. 2002). These species include Saharan mustard (*Brassica tournefortii*), London rocket (*Sisymbrium irio*), Russian thistle (*Salsola tragus*), redstem filaree (*Erodium cicutarium*), carpet weed (*Mollugo cerviana*), red

brome (*Bromus madritensis* ssp. *rubens*), cheat grass (*Bromus tectorum*), wall barley (*Hordeum murinum*), and Mediterranean grass (*Schismus barbatus*).

Seven of these species are listed in the Cal-IPC Invasive Plant Inventory Database for the Mojave Desert region (Cal-IPC 2006; Table 3.17-1) including: Saharan mustard, Russian thistle, filaree, red brome, cheat grass, wall barley, and Mediterranean grass. The remaining species are not included in the inventory database for the Mojave Desert region.

Two native species, Scarlet gaura (*Gaura* coccinea) and Cooper's broomrape (*Orobanche cooperi*) were recorded as occurring in the project area and are state-listed noxious weeds in California (USDA 2012). None of the 194 species observed in the study area during plant surveys are included on the Federal Weed List (7 CFR 360; California Department of Food and Agriculture 2011).

Table 3.17-1. Invasive, Noxious Weeds Observed in the Stateline Solar Farm Study Area

Scientific Name Common Name	Overall Cal-IPC Rating*	Cal-IPC Level of Invasiveness
Brassica tournefortii Sahara mustard	High	Severe
Salsola tragus Russian thistle	Limited	Moderate
Erodium cicutarium redstem filaree	Limited	Limited
Bromus madritensis ssp. *rubens* red brome	High	Moderate
Bromus tectorum cheat grass	High	Moderate
Hordeum murinum wall barley	Moderate	Moderate
Schismus barbatus Mediterranean grass	Limited	Limited

*as of 20 July 2012: http://www.cal-ipc.org/ip/inventory/weedlist.php
High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate – These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited – These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Noxious weeds were relatively low in abundance and diversity throughout the Stateline project area. Seven species of invasive weeds were detected during the 2008/2010/2011 floristic surveys (First Solar *2013e*), as described below.

Sahara mustard (*Brassica tournefortii*) is of high concern; it is most abundant in sandy substrate particularly where there is a history of human and or natural disturbances. Cal-IPC has declared this plant highly invasive (Cal-IPC 2006) and recommends that it should be eradicated whenever encountered.

Russian thistle (*Salsola tragus*) particularly tends to be restricted to roadway shoulders and other sites where the soil has been recently disturbed. This species was observed at the project

site and is a common invader on disturbed sites. Cal-IPC has determined that this plant has a limited invasiveness rating in California (Cal-IPC 2006). There is a high potential that Russian thistle could become established in the construction area and this species should be eradicated if observed.

Restem filaree (*Erodium cicutarium*) is a widespread annual species common in disturbed habitats, and was recorded at the Stateline site. It can form dense, transient populations when conditions are suitable. It has a limited overall rating by Cal-IPC, generally because the ecological impacts of the species are minor. Because of its widespread distribution, eradication of filaree is not considered feasible.

Red brome (*Bromus madritensis* ssp. *rubens*) is an introduced Eurasian grass adapted to microhabitats that can be frequently found at the base of desert shrubs. It can also form carpet cover in pockets of fine grained soils in rough terrain off the bajada. It is widespread and abundant in the Mojave Desert and has been found in the Stateline site. Seeds from this species can disperse readily and across large distances. Stands of red brome typically consist of less than five plants, and the stands are widely scattered. Cal-IPC has declared this plant highly invasive (Cal-IPC 2006). Because of its widespread distribution, red brome is not considered feasible for general control.

Cheat grass (*Bromus tectorum*) is among the most widely distributed invasive plant species in the western U.S. Closely related to red brome, it is adapted to colder steppe and woodland habitats. Cal-IPC has declared this plant highly invasive (Cal-IPC 2006). Because of its widespread distribution, cheat grass is not considered feasible for general control.

Wall barley (*Hordeum murinum*) is an annual grass that is generally widespread but does not usually form dominant stands. This species was observed within the Stateline project study area during floristic surveys. Foxtail barley has a moderate overall listing from Cal-IPC, but is considered severely invasive (Cal-IPC 2006).

Mediterranean grass (*Schismus* spp.) has limited invasiveness rating in California (Cal-IPC 2006). BLM and other agencies recognize that because of the widespread distribution of Mediterranean grass, this species is not considered feasible to control.

3.17.1.3 Special Status Plant Species

Special status plant species are those given special recognition by federal, state, or local resource agencies or organizations. Listed and special status species are of relatively limited distribution and typically require unique habitat conditions. All special status plant species have been identified due to dwindling populations, or merely unknown population status and the need for additional study. Special status plant species are defined as meeting one or more of the following criteria:

1. Plants listed as threatened or endangered or candidates for future listing as threatened or endangered under California Endangered Species Act (CESA) or Federal ESA;
2. Plants listed as species of concern by CDFW;
3. Plants “presumed extinct in California” (California Rare Plant Rank [CRPR] 1A), plants ranked as “rare or endangered in California” (CRPR 1B and 2), as well as CRPR 3 and 4 species;
4. Plants listed as rare under the California Native Plant Protection Act;

5. Plants considered a locally significant species, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region or is so designated in local or regional plans, policies, or ordinances; or
6. Any other plant species receiving consideration during environmental review under CEQA.

Within the biological resources study area, there are no known occurrences of any plant species listed as threatened and/or endangered by the USFWS or any plant species listed as threatened or endangered by the CDFW (i.e., no plants observed are protected under the CESA or Federal ESA).

Results of a California Natural Diversity Database query (CNDDB 2008; CNDDB 2012), and a review of the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS 2010) resulted in the identification of 22 plant species that have potential to occur within the Project area (First Solar *2013e*).

Table 3.18-2 lists CNPS and special status species that are known to occur or could potentially occur within the study area. Special status plant species observed or noted to occur within the study area during the 2008/2010/2011 surveys are indicated by bold-face type. The 2010 full coverage surveys resulted in documentation of six special status plant species (Figure 3.17-2). Eight CNPS species are known to occur within the project site, one of which – Rusby's desert-mallow – is also a BLM sensitive species. Information on the natural history, distribution, and status of these species in the project area is provided below. The status information is based on results of the 2008 intuitive controlled surveys, 2010 full coverage surveys, and the 2011 surveys of additional areas (First Solar *2013e*). In addition to the floristic surveys, online research was conducted into the CDFW's CNDDB and the CNPS' Electronic Inventory for a 5-mile radius surrounding the Study area.

CNPS and special status plant species are monitored due to concerns about population viability and as useful indicators of ecosystem health. This EIS/EIR focuses on CNPS rare plant species, which are defined as follows:

List 1B: Plants Rare, Threatened, or Endangered in California and Elsewhere.

List 2: Plants Rare, Threatened, or Endangered in California, but More Common Elsewhere

Table 3.17-2. Special Status Species Known or Potentially Occurring in the Stateline Solar Farm Project Area and Vicinity

Common Name	*Scientific Name*	Status State/Fed/CNPS/BLM (see end of table for explanation of codes)
Mormon needlegrass	*Stipa arida*	__/__/2.3/_
Clark Mountain agave	*Agave utahensis* var. *nevadensis*	__/__/4.2/_
Coyote gilia	*Aliciella triodon*	__/__/2.2/_
Small-flowered androstephium	***Androstephium breviflorum***	**__/__/2.2/_**
White bear poppy	*Arctomecon merriamii*	__/__/2.2/_
Mojave milkweed	***Asclepias nyctaginifolia***	**__/__/2.1/_**
Cima milk-vetch	*Astragalus cimae* var. *cimae*	__/__/1B.2/S
Scaly cloak fern	*Astrolepis cochisensis ssp. cochisensis*	__/__/2.3/_
Red grama	*Bouteloua trifida*	__/__/2.3/_
Purple bird's-beak	*Cordylanthus parviflorus*	__/__/2.3/_
Desert pincushion	***Coryphantha chlorantha***	**__/__/2.1/_**

Table 3.17-2. Special Status Species Known or Potentially Occurring in the Stateline Solar Farm Project Area and Vicinity

Common Name	*Scientific Name*	Status State/Fed/CNPS/BLM (see end of table for explanation of codes)
Viviparous foxtail cactus	***Coryphantha vivipara* var. *rosea***	**__/__/2.2/_**
Gilman's cymopterus	*Cymopterus gilmanii*	__/__/2.3/_
Utah vine milkweed	***Cynanchum utahense***	**__/__/4.2/_**
Nine-awned pappus grass	***Enneapogon desvauxii***	**__/__/2.2/_**
Forked buckwheat	*Eriogonum bifurcatum*	__/__/1B.2/S
Parish club-cholla	***Grusonia parishii***	**__/__/2.2/_**
Utah mortonia	*Mortonia utahensis*	__/__/4.3/_
White-margined beardtongue	*Penstemon albomarginatus*	__/__/1B.2/S
Rosy two-toned beardtongue	*Penstemon bicolor* ssp. *roseus*	__/__/2.3/_
Utah beardtongue	*Penstemon utahensis*	__/__/2.3/_
Rusby's desert-mallow	***Sphaeralcea rusbyi* var. *eremicola***	**__/__/1B.2/S**

Sources: CNDDB 2012 (Ivanpah Lake, State Line Pass, Mesquite Lake, Clark Mountain, Mescal Range, Mineral Hill, Nipton, and Desert USGS Quads); Plants: CNPS 2010, CDFG 2012.

Bold-face-type species names are those observed on the project site or plants noted by the Applicant as occurring during the 2008/2010/2011 field surveys.

Status Codes:
State-listed refers to plant species listed as threatened, endangered, or rare by the CDFW.
Federally-listed refers to plant species listed as threatened or endangered by USFWS.
California Native Plant Society

List 1B - Rare, threatened, or endangered in California and elsewhere
List 2 - Rare, threatened, or endangered in California but more common elsewhere
List 3 - Plants which need more information
List 4 - Limited distribution – a watch list
0.1 - Seriously threatened in California (high degree/immediacy of threat)
0.2 - Fairly threatened in California (moderate degree/immediacy of threat)
0.3 - Not very threatened in California (low degree/immediacy of threats or no current threats known)

BLM: Sensitive: Bureau of Land Management

BLM Manual §6840 defines sensitive species as"…species that require special management consideration to avoid potential future listing under the ESA and that have been identified in accordance with the procedures set forth in this manual". Special status species include those "collectively, federally listed or proposed and Bureau sensitive species, which include both Federal candidate species and delisted species within 5 years of delisting." In California, this manual has been temporarily modified as follows: "Unless specifically excluded by the State Director, all plant species listed by the State of California as rare, threatened, or endangered will be treated as BLM sensitive species." And "Unless specifically excluded by the State Director, all plant species on List 1B (Plants Rare, Threatened, or Endangered in California and Elsewhere) of the California Native Plant Society's Online Inventory of Rare and Endangered Plans of California that are on BLM lands or affected by BLM action and that are not Federally listed or proposed are designated as sensitive in California."

The following subsections provide a brief species account for the one plant (Rusby's Desert-Mallow) that is both a BLM Sensitive Species and a CNPS species, as well as seven additional CNPS plant species observed during field surveys.

Rusby's Desert-Mallow (Sphaeralcea rusbyi var. eremicola)

Rusby's desert-mallow is a California endemic perennial herb that is both a CNPS List 1B.2 species and a BLM Sensitive species. It is documented globally from less than 30 occurrences in Inyo and San Bernardino Counties, in the Death Valley Region and in the Clark Mountain Range. It has a CNDDB state rank of S2 (imperiled). It occurs at elevations ranging from 3,200 to 4,900 feet above mean sea level (amsl) in both Mojavean desert scrub and Joshua tree

woodlands; specifically, in the Clark Mountain Range at Ivanpah Springs, on desert slopes and gravelly sandy washes and often in carbonate and limestone substrate, extending into the project area. Although the project site is located at the low end of this species' typical elevation range, 12 individuals were recorded at five locations during the 2010 surveys. This species was observed at the higher elevation portions of the study area during 2008.

Mojave Milkweed (Asclepias nyctaginifolia)

The California distribution of Mojave milkweed is limited to a very small area in eastern San Bernardino County. Currently, it is known from less than 25 occurrences, 16 of which occur in Ivanpah Valley in the project area**.** Its distribution outside Ivanpah Valley is limited to a few very old historic collections and only two other populations that have been confirmed extant (CNDDB 2012). This perennial plant also occurs in Arizona, New Mexico, and Nevada, but it has a CNDDB state rank of S1 (critically imperiled and vulnerable to extirpation from the state due to extreme rarity). The habitat of Mojave milkweed in California includes washes and dry slopes from about 3,300 to 5,600 feet amsl in Mojavean desert scrub and pinyon-juniper woodland. Within the Study area, more than 100 individuals of this species were observed during the 2010 surveys at 15 different locations (predominantly found at higher elevations with rocky soils). Mojave milkweed was also identified and recorded during the 2008 surveys.

Small-Flowered Androstephium (Androstephium breviflorum)

Small-flowered androstephium (also known as pink funnel lily) is a bulbiferous herb found mainly in San Bernardino County, though it has been recorded in adjacent Riverside County and possibly Inyo County. This species also occurs in Arizona, Nevada, and Utah. It is found in dry, loose sandy to rocky soils and on sand dunes and alluvial fans, and typically occurs at elevations from 730 to 2,100 feet amsl. Within the study area, this CNPS List 2.2 species is found within the lower alluvial near the fringe of Ivanpah Dry Lake where soils are generally finer; this species was not noted as occurring in higher elevations. During the 2010 full coverage surveys, approximately 150 individuals were observed at 91 distinct locations. Many new occurrences of this species have been found in recent years and the project area includes only a very small portion of its total distribution in California.

Desert Pincushion (Coryphantha chlorantha)

Desert pincushion is a stem succulent found in the Mojave Desert in San Bernardino and Inyo counties, and also occurs in Arizona, Nevada, and Utah. It has a CNDDB global rank of G2 (imperiled and at high risk of extinction due to a very restricted global range) and a CNDDB state rank of S1 (critically imperiled). In California, its habitat is gravelly or rocky carbonate substrates at elevations ranging from 145 to 5,000 feet amsl, and its distribution is apparently restricted to a few mountain ranges in the eastern *California portion of the* Mojave Desert, in eastern San Bernardino County and southeastern Inyo County. Desert pincushion was recorded during both the 2008 and 2010 field surveys, with more than 20 individuals identified as occurring at 17 unique locations within the Study area in 2010. Most individuals were found in Mojave creosote bush scrub.

Viviparous Foxtail Cactus (Coryphantha vivipara var. *rosea)*

Viviparous foxtail cactus is a perennial stem succulent that is found in Mojavean desert scrub and Pinyon and juniper woodlands of San Bernardino and Inyo Counties, California, and into Arizona and Nevada (CNPS 2010). This CNPS List 2.2 species prefers carbonate soils at elevations ranging from 4,100 to 8,860 feet amsl. During the 2008 intuitive controlled surveys, this species was present within upper-elevation stabilized alluvial fan with rocky/gravelly soils. During the full coverage surveys in 2010, viviparous foxtail cactus was not observed at lower elevations within the footprint of the Project alternatives.

Utah Vine Milkweed (Cynanchum utahense)

Utah vine milkweed is a perennial herb found in the Mojave Desert in San Bernardino County and in the Colorado Desert in Riverside, Imperial, and San Diego Counties. This species also occurs in Arizona, Nevada, and Utah (CNDDB 2012). In California its habitat is sandy and gravelly soils, often in washes climbing up through shrubs. The CNDDB electronic files do not track CNPS List 4 species, but two Element Occurrences in the CNDDB paper files were located. Herbarium records noted approximately 42 additional occurrences. More than 30 individuals of this CNPS List 4.3 species were identified and recorded at 12 separate locations during the 2010 field surveys of the Study area. Previously, Utah vine milkweed was observed during the 2008 surveys.

Nine-Awned Pappus Grass (Enneapogon desvauxii)

Nine-awned pappus grass is a widespread species of the southwestern U.S., Mexico and South America, but the California range of this species is restricted to a small portion of eastern Mojave Desert, in San Bernardino County (CNDDB 2012). It has a CNDDB state rank of S2 (imperiled). Habitat of nine-awned pappus grass in California consists of rocky slopes, crevices, calcareous soils, in desert woodland. In the Ivanpah Valley, this species occurs often on north-facing sides of medium-sized to large washes, and on cobble mounds within and outside of washes that include some calcareous rocks, from 4,180 to 5,990 feet amsl, in *Larrea tridentata-Ambrosia dumosa* shrubland. This perennial herb blooms late-season in response to summer rainfall events. In 2010, no individuals of this species were observed within the footprint of the project alternatives (lower elevation), although nine-awed pappus grass was noted as occurring at higher elevations in 2008.

Parish's Club-Cholla (Grusonia parishii)

The California range of Parish's club-cholla has a CNDDB state rank of S2 (imperiled). This stem succulent is relatively widespread with recorded occurrences in San Bernardino, Imperial, and Riverside Counties, California, as well as in Nevada, Arizona, and possibly Texas. The habitat of Parish's club-cholla within the project area consists of sandy to somewhat gravelly/rocky uplands in the *Larrea tridentata-Ambrosia dumosa* shrubland alliance, at elevations ranging from 980 to 5,000 feet amsl. This species grows in clones consisting of spreading mats that may form separate patches over time. Over 50 individuals were documented as occurring in 27 different locations of the study area during the 2010 field surveys. Additionally, this species was observed within the higher elevations of the study area in 2008.

3.17.1.4 Jurisdictional Waters

The Stateline project area is located on an alluvial fan, in a basin completely surrounded by mountains; this geographic setting ensures that the area is completely isolated from all surrounding areas where navigable waters may exist. While the study area does not contain any permanent wetlands, riparian areas, or sensitive plant communities; it does however, contain numerous ephemerally-flowing desert washes. Alluvial fans are often interrupted by washes and these drainage channels within the project area show signs of surface water flow from previous rainfall events. These desert washes, which range in size and depth, *convey runoff only during and shortly after large storm events. The runoff is conveyed across the site towards Ivanpah Dry Lake, and in many cases, the runoff infiltrates and fails to reach all the way to the lake.*

Ivanpah Lake, which spans the California-Nevada state boundary, is an interstate water, water of the United States (WUS), and is subject to U.S. Army Corps of Engineers (USACE) jurisdiction under Section 404 of the Clean Water Act (CWA), according to 33 CFR 328. Because it is dry most of the time, it is not considered a navigable water. Approximately 60 acres of the study area (not within the Proposed Action footprint) is comprised of Ivanpah Lake. Both the lake and the drainage channels have defined ordinary high water marks, in the form of watermarks, scour marks, shelving, or in some cases vegetative drift lines; however, hydrophytic vegetation is not a prominent component of either (LSA 2011a).

CDFW concurred that a sampling methodology was necessary to quantify the ephemeral drainages, and field work for the jurisdictional delineation was conducted in December 2010 and March 2011. Both Federal and State jurisdictional delineation data was collected along 10 transects (1,500 feet apart), which were set up north-to-south across the site (perpendicular to existing desert washes). The entire length of each transect was surveyed on foot. Global positioning system data were recorded at each point where an active ephemerally-flowing wash intersected the transect line. Jurisdictional features were mapped by tracing data on plastic overlaid on high-resolution aerial photographs.

The Applicant's Jurisdictional Delineation Report (LSA 2011b) was submitted to the USACE for their determination. In a letter dated December 2, 2012, the USACE concurred that the project is not subject to USACE jurisdiction under Section 404, and that a Section 404 permit is not required (Swenson 2012). It was determined, however, that the alluvial washes would be subject to CDFW jurisdiction, and may also require Waste Discharge Requirements (WDRs) issued either by the State Water Resources Control Board or Lahontan Regional Board.

In addition to the resources on the Project site, the portion of Ivanpah Lake that lies within the study area (approximately 60 acres)*, but outside of any of the alternative project footprints,* is subject to both CDFW jurisdiction pursuant to Section 1602 of the Fish and Game Code and USACE jurisdiction under Section 404 of the CWA. In total, the study area includes approximately 490 acres of resources (streambed and lake) that are potentially subject to CDFW jurisdiction *and Water Board WDRs*.

3.17.1.5 Creosote Rings

Creosote rings are formed by the vegetative reproduction of single "parent" plants of the creosote bush (Larrea tridentata), which is common in the Project area. The Applicant's studies included visual inspection (during vegetation surveys) and review of high resolution aerial photography to identify the presence of creosote rings. No rings were found within the Project Study Area.

3.17.2 Applicable Regulations, Plans, and Standards

This section provides a discussion of federal, state, and regional environmental regulations, plans, and standards applicable to the Stateline Solar Farm project for vegetation resources and state and federal jurisdictional areas.

3.17.2.1 Federal

The Stateline Solar Farm project area is located on federal land under BLM's jurisdiction and is therefore subject to the provisions of BLM's CDCA Plan, as amended (Revised 1999). The NEMO Plan amendment (BLM 2002) consists of management actions and alternatives for public lands in the NEMO Planning Area *within the CDCA*. The project area is located in the southeastern portion of the NEMO Planning Area Boundary.

The Federal Land and Management Act of 1976, as amended (43 U.S.C. 1701-1782), designated a 25 million-acre area in southern California as the CDCA, of which 10 million acres are managed by the BLM. The CDCA Plan (BLM 1980) is a comprehensive, long-range plan with goals and specific actions for the management, use, development and protection of the resources and public lands within the CDCA and is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality.

The Vegetation Element of the CDCA Plan contains the following goals: to conserve federally- and State-listed rare, threatened, or endangered plants and to further the purposes of the ESA and similar State laws; to treat unusual plant assemblages that rate as highly sensitive and very sensitive in a manner that will preserve their habitat and ensure their continued existence; to manage wetland and riparian areas in the desert; to sustainably maintain the continued existence and biological viability of the vegetation resources in the CDCA while providing for the consumptive needs of wildlife, livestock, wild horses and burros, and public uses; to provide guidance for the manipulation of plant habitats or vegetation; and to encourage the use of private desert lands for commercial production of valuable desert plants. The plan identifies the need for monitoring efforts and directing these efforts to those areas with the greatest management need.

Executive Order 11990 Protection of Wetlands

This order establishes a national policy to avoid adverse impacts on wetlands whenever there is a practicable alternative.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (16 U.S.C. 661 666) applies to any federal project where the waters of any stream or other body of water are impounded, diverted, deepened, or otherwise modified. Project proponents are required to consult with the USFWS and the appropriate state wildlife agency. These agencies prepare reports and recommendations that document project effects on wildlife and identify measures that may be adopted to prevent loss or damage to wildlife resources. The term "wildlife" includes both animals and plants. Provisions of the Act are implemented through the NEPA process and Section 404 permit process.

The BLM has worked with the USFWS to develop a variety of land designations as tools to protect sensitive biological resources, including the desert tortoise *in this area*. The process of

siting and configuring the project considered the management direction of these designations, as described below:

- **Desert Wildlife Management Areas** are general areas recommended by the Desert Tortoise Recovery Plan (USFWS 1994) within which recovery efforts for the desert tortoise would be concentrated. DWMAs had no specific legal boundaries in the 1994 Recovery Plan. The BLM formalized the general DWMAs from the 1994 Recovery Plan through its planning process and administers them as Areas of Critical Environmental Concern (see below). The Stateline Solar Farm project area does not fall within any DWMA.
- **Areas of Critical Environmental Concern** are specific, legally defined, BLM designations where special management is needed to protect and prevent irreparable damage to important historical, cultural, scenic values, fish and wildlife, and natural resources or to protect life and safety from natural hazards. The Stateline Solar Farm project area is not included within any designated ACEC.

Endangered Species Act

The ESA was passed by the U.S. Congress in 1973, and has since been amended several times. The ESA and regulations implementing the ESA, 50 CFR 17.1 et seq., designate and provide for protection of threatened and endangered plants and animals and their critical habitat. "Take" of listed animal species and of listed plant species is prohibited without obtaining a federal permit. Take is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." Harm includes any act that actually kills or injures fish or wildlife, including significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife. Activities that damage the habitat of (i.e., harm) listed wildlife species require approval from the USFWS for terrestrial species. The ESA also generally requires determination of critical habitat for listed species. If critical habitat has been designated, impacts to areas that contain the primary constituent elements identified for the species, whether or not it is currently present, is also prohibited.

Under Section 7 of the ESA, a federal agency that authorizes, funds, or carries out a project that "may affect" a listed species or its critical habitat must consult with the appropriate Federal agency, in this case the USFWS. In a Section 7 Consultation, the lead agency (BLM) prepares a biological assessment (BA) that analyzes whether the project is likely to adversely affect listed wildlife or plant species or their critical habitat, and proposes suitable avoidance, minimization, or compensatory mitigation measures. If the action would adversely affect the species, the action agency formally consults with the USFWS, which prepares a Biological Opinion determining whether the project is likely to jeopardize the species or result in adverse modification of critical habitat.

In this case, because there are no federally listed plant species present within the Project Study Area, the Federal ESA would not be applicable to vegetation resources *potentially impacted by* the Proposed Action.

Clean Water Act

The CWA (33 U.S.C. 1251 et seq) is intended to restore and maintain the quality and biological integrity of the nation's waters. It prohibits the discharge of pollutants into WUS without a National Pollutant Discharge Elimination System (NPDES) permit from the EPA. By issuing

NPDES permits, the EPA can regulate the discharge of pollutants to protect water quality. *The Project does not require a NPDES permit.*

Section 404 of the CWA provides that whenever any person discharges dredged or fill material into waters of the U.S. (e.g., streams, wetlands, lakes, bays) a permit is required from the USACE. The USACE has issued 50 separate Nationwide Permits (NWPs) for different types of projects with impacts to wetlands (as of March 19, 2007). Depending on the level of impact, projects qualifying for an NWP may be required to provide the USACE with Pre-Construction Notification of the impacts and meet other restrictions. Projects with greater wetland impacts than those allowed under one of the NWPs require an Individual Permit. *The USACE has determined that the ephemeral washes on the site are not subject to Section 404 jurisdiction (LSA 2011b; Swenson 2012).*

Section 401 of the CWA requires that an applicant for a federal license or permit to discharge into navigable waters must provide the federal agency with a water quality certification, declaring that the discharge would comply with water quality standards requirements of the CWA. USACE issuance of a Section 404 permit triggers the requirement that a Section 401 certification also be obtained. In California, the Regional Water Quality Control Boards (RWQCBs) issue this certification.

BLM Sensitive Species

BLM Sensitive Species are species designated by the State Director that are not already federal listed proposed, or candidate species, or state listed because of potential endangerment. BLM's policy is to "ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered." Various offices of the BLM maintain a list of special status plant and wildlife species that are to be considered as part of the management activities carried out by the BLM on the lands that they administer.

One BLM sensitive species, the Rusby's desert mallow, is present within the Project Study Area. Although the project site is located at the low end of this species' typical elevation range, 12 individuals were recorded at five locations during the 2010 surveys. This species was observed at the higher elevation portions of the study area during 2008.

Executive Order 13112 – Invasive Species

Executive Order 13112 was signed in February 1999 and established the National Invasive Species Council. This Order requires agencies to prevent the introduction of invasive species; to provide for their control; and to minimize the economic, ecological, and human health impacts that invasive species cause to the extent practicable and permitted by law.

Federal Noxious Weed Act of 1974, as amended

This Act established a federal program to control the spread of noxious weeds. The Secretary of Agriculture is authorized to designate plants as noxious weeds. The movement of all such weeds in interstate or foreign commerce is prohibited except under permit.

Cactus and Yucca Removal Guidelines, BLM

The BLM normally requires transplanting or salvage of certain native plant species that would be lost to development on lands under their jurisdiction. Species that typically require salvage

regardless of their height in this region include yuccas (*Yucca* spp.), *agaves (Agave spp.), nolinas (Nolina spp.),* and cacti. For chollas, the plant must be less than 3 feet in height to require salvaging; all plants greater than 3 feet in height must be left on-site to be destroyed during clearing activities (BLM 2002). *The larger sacrificed chollas become additions to the normally scant natural desert mulch and may provide improved conditions for a seed bank that regenerates these species.*

Because cactus and yucca species are found within the Project Study Area, these requirements would apply to the Proposed Action.

3.17.2.2 State

California Endangered Species Act

The CESA, enacted to protect sensitive resources and their habitat, is similar to the federal ESA and is administered by the CDFW. Unlike ESA, state listed plants have the same degree of protection as wildlife, but insects and other invertebrates may not be listed. The CESA prohibits the take of CESA-listed species unless specifically provided for under another state law. CESA does allow for incidental take associated with otherwise lawful development projects.

Take authorization may be obtained by the project applicant from CDFW under California ESA Sections 2091 and 2081. Section 2091, like ESA Section 7, provides for consultation between a state lead agency under the CEQA and CDFW, with issuance of take authorization if the project does not jeopardize the listed species. Section 2081 allows take of a listed species for educational, scientific, or management purposes. The CDFW recommends the development of appropriate mitigation planning to offset project-induced losses of listed species. A project applicant is responsible for consulting with the CDFW (if applicable) to preclude activities that are likely to take any CESA-listed threatened or endangered species. If a take of these species could occur, then an Incidental Take Permit (CDFG Code Section 2081) would be required.

Because there are no state listed plant species present within the Project Study Area, the CESA would likely not be applicable to vegetation resources for the Proposed Action.

California Environmental Quality Act

CEQA was enacted in 1970 to provide for full disclosure of environmental impacts to the public before issuance of a permit by state and local public agencies. In addition to federal or state listed species, “sensitive” plants and animals receive consideration under CEQA. Sensitive species include, but are not limited to, wildlife Species of Special Concern listed by CDFW, and plant species on the California Native Plant Society’s List 1A (presumed extinct), List 1B (rare, threatened, or endangered in California and elsewhere; eligible for state listing), or List 2 (rare, threatened, or endangered in California but more common elsewhere; eligible for state listing).

California Fish and Game Code

Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code outline protection for fully protected species of mammals, birds, reptiles, amphibians, and fish. Species that are fully protected by these sections may not be taken or possessed at any time. CDFW cannot issue permits or licenses that authorize the “take” of any fully protected species, except under certain circumstances such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock. Furthermore, is the responsibility of

the CDFW to maintain viable populations of all native species. To that end, the CDFW maintains a Special Plants list.

California Native Plant Protection Act

The Native Plant Protection Act (NPPA) of 1977 directed the CDFW to carry out the Legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The NPPA gave the California Fish and Game Commission the power to designate native plants as "endangered" or "rare" and protect endangered and rare plants from take. The CESA of 1984 expanded on the original NPPA and enhanced legal protection for plants, but the NPPA remains part of the Fish and Game Code. To align with federal regulations, CESA created the categories of "threatened" and "endangered" species. It converted all "rare" animals into the Act as threatened species, but did not do so for rare plants. Thus, there are three listing categories for plants in California: rare, threatened, and endangered. Because rare plants are not included in CESA, mitigation measures for impacts to rare plants are specified in a formal agreement between CDFW and the project proponent.

Porter-Cologne Act

The intent of the Porter-Cologne Act is to protect water quality and the beneficial uses of water, and applies to both surface and groundwater. Under this law, the California State Water Resources Control Board develops statewide water quality plans, and the RWQCBs develop basin plans that identify beneficial uses, water quality objectives, and implementation plans. The RWQCBs have the primary responsibility to implement the provisions of both statewide and basin plans. Waters regulated under Porter-Cologne include isolated waters that are *not* regulated by USACE. Developments which impact jurisdictional waters *through alteration of streambeds, land disturbance of one or more acre, or discharge of low threat wastes to land or surface water would be subject to Water Board WDRs, including implementation of a* Storm Water Pollution Prevention Plan.

Streambed Alteration Agreements, California Fish and Game Code, Sections 1600 – 1616

Prior to commencement of any activity that would substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank (which may include associated riparian resources) of a river, stream or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake, the applicant shall submit a complete Lake or Streambed Alteration Program notification package and fee to the CDFW. The Lake and Streambed Alteration Program is a California law that requires that any person, state or local government agency, or public utility notify the CDFW prior to beginning of the activities listed above. The CDFW has 30 days to review the proposed actions and propose measures to protect affected fish and wildlife resources. *CDFW may determine that a Streambed Alteration Agreement is necessary. Such an agreement between CDFW and the Applicant typically includes terms and conditions, which may include mitigation measures, which must be mutually agreed upon between CDFW and a project proponent. Based on the expected impacts to CDFW jurisdictional drainages on-site, it is likely that CDFW will require a Streambed Alteration Agreement for the Project. Therefore, the Applicant would be required to submit a Notification of Lake or Streambed Alteration to CDFW in connection with the Project.*

California Food and Agriculture Code §80001 et seq. – California Desert Native Plants Act

The purpose of this act is to protect California desert native plants from unlawful harvesting on both public and privately owned lands. The act provides for legal harvesting of native plants. *None of the native desert species listed in §80072 are known to occur in the Project Site. Under §80073, the certain native plants, or any part thereof, may not be harvested except under a permit issued by the commissioner or the sheriff of the county in which the native plants are growing. Species covered under §80073 and known or suspected to occur in the area include: Spanish bayonet (Yucca baccata), Mojave yucca (Y. schidigera), all cacti, mesquites (Prosopis spp.), catclaw acacia (Senegalia greggii), and smoke tree (Psorothamnus spinosus).*

California Code of Regulations §670.2 and §670.5

The code lists wildlife and plant species listed as threatened or endangered in California or by the federal government under the ESA. Species considered future protected species by the CDFW are designated California Species of Special Concern (CSC). CSC currently have no legal status, but are considered indicator species useful for monitoring regional habitat changes. No California Species of Special Concern occur within the Project Study Area.

CEQA Guidelines §15380

CEQA Guidelines §15380(b) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria.

3.17.2.3 Local

San Bernardino County Development Code

Division 8, provision 88.01.10 of the San Bernardino County Development Code states that a removal permit is required for the removal of any native tree or plant that is subject to Division 8. Removals of native trees or plants that are not requested in conjunction with a land use application or development permit may be accomplished only under a permit issued by either the County Agricultural Commission or the County Fire Warden, subject to the provisions of this chapter. The Building Official or the Director of Environmental Health Services Department shall require a preconstruction inspection prior to approval of development permits.

Approval from the County is required to remove, harvest or transplant a living desert native plant. Per provision 89.0415 of the code, the following desert native plants, cannot be harvested or removed except under a permit issued by the Agricultural Commissioner or other applicable County Reviewing Authority: (1) desert plants with stems two inches or greater in diameter or six feet or greater in height (e.g. *Dalea spinosa* [smoketree]), (2) all species of the genus *Prosopis* (mesquites), (3) all species of the family Agavaceae (century plants, nolinas, yuccas), (4) creosote rings, ten feet or greater in diameter, and (5) all Joshua trees.

San Bernardino County General Plan

The San Bernardino County General Plan requires the retention of existing native vegetation for new development projects, particularly Joshua trees, Mojave yuccas and creosote rings, and other species protected by the Development Code and other regulations. This retention can be accomplished by requiring the Building Official to make a finding that no other reasonable siting

alternatives exist for development of the land prior to removal of a protected plant; encouraging on-site relocation of Joshua trees and Mojave yuccas; and by requiring the developer to bear the cost of tree or yucca relocation.

The San Bernardino County General Plan requires 50-100 feet riparian setbacks that prohibit removal of mature natural vegetation and prohibits removal of vegetation within 200 feet of a stream without a tree permit and environmental review with mitigations imposed. The San Bernardino County General Plan also encourages the use of conservation practices in the management of grading, replacement of ground cover, protection of soils, natural drainage, and the protection and replacement of trees.

The San Bernardino County General Plan does not apply to projects located entirely on federal lands.

3.18 Visual Resources

Assessing visual resources impacts involves a systematic analytical process to logically evaluate visible changes in the physical environment and the anticipated viewer response to that change. The visual resources section describes the existing landscape character and visual quality of the Stateline Solar Farm area, existing views of the proposed facility location from various on-the-ground vantage points, the visual characteristics of the proposed facility and alternatives, and the landscape changes that would be associated with the construction and operation of the proposed facility and alternatives as seen from various vantage points.

For the purposes of this analysis, the proposed Stateline Solar Farm study area is defined as the areas and locations from which the proposed facility would be visible also referred to as the project viewshed. This area consists of the portion of the Ivanpah Valley within California, in which the proposed facility could be visible from any location in the valley.

3.18.1 Environmental Setting

3.18.1.1 Regional Setting

The proposed Stateline Solar Farm project is located within the Ivanpah Valley of the Basin and Range physiographic province. This area is characterized by rough, rocky mountains formed by northerly trending fault blocks. Typical of this province are isolated desert basins and jagged ranges along with desert alluvial slopes (bajadas) and wide valleys that are interconnected across low divides (Hunt 1974). Views from travel routes within the vicinity of the study area tend to encompass broad, sweeping desert expanses bordered by rugged mountain ranges. Within this regional setting, the study area for the visual resources analysis is defined by the numerous viewpoints from which the proposed facility would be seen, which includes the entire southern portion of the Ivanpah Valley. The viewshed encompasses an area approximately 15 miles from north to south, and approximately 10 miles from east to west.

3.18.1.2 Approach to Baseline Analysis

General Approach

The technical approach to analyzing impacts to visual resources within the project viewshed was based on BLM's Visual Resource Management (VRM) System, which is the system that BLM requires for use on BLM-administered public lands. This approach is described in Appendix C.

Visual Resource Inventory (VRI)

The inventory stage involves identifying the visual resources of an area and assigning them to inventory classes using the BLM's VRI process. The process involves rating the visual appeal of a tract of land, measuring public concern for scenic quality, and determining whether the tract of land is visible from travel routes or observation points. The process is described in greater detail in BLM Handbook H-8410-1, Visual Resource Inventory (BLM 1986).

Visual resource inventory classes are assigned through the inventory process. Class I is assigned to those areas where a management decision has been made previously to maintain a natural landscape. This includes areas such as national wilderness areas, the wild section of national wild and scenic rivers, and other congressionally and administratively designated areas where decisions have been made to preserve a natural landscape. Classes II, III, and IV are assigned based on a combination of scenic quality, sensitivity level, and distance zones. This is accomplished by combining the 3 overlays for scenic quality, sensitivity levels, and distance

zones and using the guidelines specified in BLM Handbook H-8410-1 to assign the proper class. The end product is a visual resource inventory class overlay. Inventory classes are informational in nature and provide the basis for considering visual values in the planning/NEPA process. They do not establish management direction and should not be used as a basis for constraining or limiting surface disturbing activities.

Visual Resource Management Objectives

VRM objectives are established in resource management plans. VRM decisions consider visual values established by the VRI along with land use allocations, desired outcomes, and future desired conditions. The management classes may differ from inventory classes based on management priorities for land uses and compatibility with land use allocations.

For the project study area, an Interim VRM Class III objective has been established. Interim visual management classes are established where a project is proposed and there are no resource management plan-approved VRM objectives. These classes are developed using the VRI process and must conform to the land use allocations set forth in the resource management plan covering the project area (the CDCA Plan).

The interim objectives serve as the baseline for plan conformance, while the underlying VRI remains the baseline for determining actual physical impacts on the visual resources of the area.

3.18.1.3 Project Viewshed

Description

The project study area for the purposes of visual resources (i.e., its viewshed) is defined as all land areas from which any element of the project would be visible. This would include almost any location within the California portion of the Ivanpah Valley, as well as many locations within the Nevada portion of the Ivanpah Valley. Views of the project site would be readily available from I-15, the Primm Resorts, the town of Nipton, and from numerous BLM open routes that pass through and near the project site. The site would also be visible from the surrounding mountains, including the Stateline and Mesquite Wilderness areas and the Clark Mountain ACEC. Figure 3.18-1 presents a project viewshed map.

The proposed facility location site is situated on the lower portion of an alluvial fan at the northern end of Ivanpah Valley, along I-15. The site consists primarily of a gently sloping alluvial fan flattening out to the playa surface of Ivanpah Dry Lake. Vegetation is sparse, predominantly low-growing grasses and shrubs such as creosote. The area is bisected by several dry washes ranging in size from 2 feet wide and a few inches deep in most places, to more than 10 feet wide and 4 feet deep in others. The valley itself is bordered on most sides by rugged, rocky, mountains and jagged ridgelines. Steeply rising, barren slopes and ridges of the Clark, Spring, and Ivanpah Mountains to the south, west, and north, and the Lucy Gray, McCullough, and New York Mountains to the east, define the Ivanpah Valley in the project vicinity, creating an enclosed viewshed.

Several existing electrical transmission lines cross the site, and are prominent in views of this portion of the valley. Other prominent built features currently existing within a few miles of the proposed facility include I-15, the Union Pacific Railroad, the Ivanpah SEGS facility (currently under construction), the Primm Valley Golf Course, the Walter Higgins Bighorn Generating Station, the Silver State Solar facility, and the three casino/hotels and other buildings that form the Primm Resorts at the California-Nevada state line. One main travel route, I-15, passes through Ivanpah Valley from the north to the southwest within 1 mile of the proposed facility. The proposed site is located immediately to the north of the Primm Valley Golf Course, a slightly

elevated site with irrigated landscaping and perimeter berm-slopes which contrast conspicuously with the surrounding natural landscape for viewers in its vicinity.

While the project portion of the Ivanpah Valley is visually relatively intact, it is located roughly 30 miles south of the City of Las Vegas, within a visual corridor along I-15 that becomes increasingly urbanized and less scenically intact as one progresses northward. Thus, in a regional context, the site is located at the outer edge of urban influence of the City of Las Vegas metropolitan area. I-15 adjacent to the project site is the principal travel route for visitors to Las Vegas from southern California.

Classification

The analysis of Scenic Quality measures the visual appeal of the landscape. Scenic Quality is rated as Class A, Class B, or Class C based on a scoring system using the factors of Landform, Vegetation, Water, Color, Adjacent Scenery, Scarcity, and Cultural Modification. For purposes of evaluating Scenic Quality, BLM's inventory (BLM 2010) included establishment of Scenic Quality Rating Units (SQRUs) based on similarity of physiographic characteristics such as geology, vegetation, hydrology, texture, color, variety, and topography. The project site is located in SQRU 009, Primm Valley. Table 3.18-1 summarizes the results of the field inventory assessment of Scenic Quality for SQRU 009, which includes the project site. This rating would apply to all locations in the project area.

Table 3.18-1. Scenic Quality Rating, SQRU 009, Primm Valley

Factor	Rating	Rationale
Landform	1.5	Flat valley bottom; some interesting features in the north
Vegetation	2	Predominantly creosote and sage community
Water	0	Not present
Color	3	Vegetation color dominant; contrast in creosote/sage/grass
Adjacent Scenery	3	Enclosed landscape surrounded by mountain ranges far in the distance
Scarcity	2	Mountain valleys and dry lake beds common in the region
Cultural Modification	-1	Casino, golf course detract from scenic quality and dominate the view from many locations
Total	**10.5, results in Scenic Quality Classification of Class C**	

For the analysis of viewer sensitivity, the area was divided into Sensitivity Level Rating Units (SLRUs). The project site is located within SLRU 09, Primm Valley, but is also visible from SLRU 48 (Mojave National Park Boundary) and SLRU 50 (Clark Mountain Climbing Area). Each SLRU was rated high, moderate, or low based on viewer sensitivity factors including type of use, amount of use, public interest, adjacent land uses, Special Area Sensitivity, and "other factors". Table 3.18-2 summarizes the results of the field inventory assessment of Sensitivity Level for SLRU 09, which includes the project site, and SLRU 48 and SLRU, from which the site is visible.

Table 3.18-2. Sensitivity Level Rating

Factor	Rating (H/M/L)	Rationale
SLRU 09, Primm Valley		
Type of Use	H	Gateway to California, Las Vegas; Las Vegas boundary mentally extends to this valley
Amount of Use	H	The I-15 corridor is heavily used by commuters, travelers, recreationists, and local residents.
Public Interest	M	Local residents of Nipton and Primm may be vocal about changes in scenic quality
Adjacent Land Uses	M	Highly visible from outside due to bowl shape; wilderness, access to Mojave National Preserve
Special Area Sensitivity	NP	Not present
Other Factors	H	Higher sensitivity in the southern part of the unit due to cultural significance
Overall Rating	H	
SLRU 48, Mojave National Park Boundary		
Type of Use	H	Recreation, sightseeing, history buffs
Amount of Use	H	Heavily used travel corridors pass through the area
Public Interest	H	Local, regional, national
Adjacent Land Uses	H	Within viewshed of heavily used travel corridors: I-15, Highway 40, Route 66
Special Area Sensitivity	NP	Not present
Other Factors	NP	Not present
Overall Rating	H	
SLRU 50, Clark Mountain Climbing Area (Mojave Point)		
Type of Use	H	Active and passive recreation, solitude
Amount of Use	H	Approximately 500,000 visitors per year in some locations
Public Interest	H	Local, regional
Adjacent Land Uses	H	Within viewshed of other critical travel corridors
Special Area Sensitivity	NP	Not present
Other Factors	NP	Not present
Overall Rating	H	

The third component of the Visual Resource Inventory process is the delineation of Distance Zones. For the purpose of defining Visual Resource Inventory Classes, the Needles Field Office used only the Foreground-Middleground distance zone for the entire Field Office area (BLM 2010).

The above ratings for each of the three factors of Scenic Quality, Sensitivity Level, and Distance Zone were evaluated within BLM's matrix for determining Visual Resource Inventory Classes. In the case of the Proposed Action area, the analysis of scenic quality, viewer sensitivity and distance zones in the most recent VRI for the project area (BLM 2010) concluded that the inventory class is VRI III. The CDCA plan allocation for the project area is MUC L, which allows for solar electric facilities. Specific projects must be evaluated through a plan amendment to ensure consistency with all goals and objectives for this class. The conformity of the Proposed Action with the CDCA Plan's Energy Production and Utility Corridors Element Decision Criteria is discussed in Section 4.6.

Mitigation measures (presented in Section 4.18) will be implemented to minimize the visual impacts of the project. This practice will mitigate visual contrast from other areas the project may be seen from, but not included as, critical Key Observation Points (KOPs). Taking the inventory class into consideration, recent developments that have been undertaken and/or approved in the project area, the employment of mitigation measures, and the project's consistency with the MUC, an interim VRM Class III has been established for the project area, because of the demonstrated ability to construct the project and maintain conformance with VRM Class III objective. The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

3.18.1.4 Evaluating Visual Impacts Through the Contrast Rating Process

The contrast rating system is a systematic process used by the BLM to analyze potential visual impact of proposed projects and activities. It is primarily intended to assist Bureau personnel who are not formally trained in the design arts to apply the basic principles of design in the resolution of visual impacts. It is not intended to be the only means of resolving these impacts. It should be used as a guide, tempered by common sense, to ensure that every attempt is made to minimize potential visual impacts. The basic philosophy underlying the system is: The degree to which a management activity affects the visual quality of a landscape depends on the visual contrast created between a project and the existing landscape. The contrast can be measured by comparing the project features with the major features in the existing landscape. The basic design elements of form, line, color, and texture are used to make this comparison and to describe the visual contrast created by the project. This assessment process provides a means for determining visual impacts and for identifying measures to mitigate these impacts. The contrast of projects is evaluated using KOPs.

The contrast rating is done from the most critical viewpoints. This is usually along commonly traveled routes or at other likely observation points. *Environmental factors* that should be considered in selecting KOP's are: angle of observation, number of viewers, length of time the project is in view, relative project size, season of use, and light conditions. Linear projects such as power lines should be rated from several viewpoints representing:

- Most critical viewpoints, e.g., views from communities, road crossings;
- Typical views encountered in representative landscapes, if not covered by critical viewpoints; and
- Any special project or landscape features such as skyline crossings, river crossings, substations, etc.

The KOP locations for the Stateline Solar project were selected based on their usefulness in evaluating existing landscapes and potential impacts on visual resources with various levels of viewer sensitivity, in different terrain, and from various vantage points. *The Applicant initially selected 13 KOPs (KOP-1 through KOP-13) for documenting the existing conditions in the project area. Based on review of the locations, BLM selected seven of these KOPs (KOPs 3, 5, 6, 7, 9, 10, and 12) for visual simulation and analysis.* The KOP locations include: (1) the view from major or significant travel corridors (I-15); and (2) views from nearby recreation areas (Primm Resorts, the Primm Valley Golf Course and Stateline Wilderness area). *Of the KOPs not selected for simulation and analysis, four of them (KOPs 1, 4, 8, and 11) are very similar to selected locations, so would not provide additional information. The other two (KOPs 2 and 13) are directly on the fenceline of the Project area. Although KOPs 2 and 13 would, by their proximity, obviously be subjected to a substantial visual change, these locations would only be*

visited by a very small percentage of visitors to the area. The KOPs selected for analysis include views of the facility from all angles, and views which would be experienced by the vast majority of visitors. The *KOP* locations, shown on Figure 3.18-1, provide representative examples of the existing landscape context and viewing conditions for the Proposed Action and other alternatives.

With respect to the environmental factors for selection of KOPs, the seven selected KOPs provide the following:

Angles of Observation

The KOPs include locations on all sides of the Project site, as well as locations with elevations above and below the Project site.

Number of Viewers

All of the locations which would have the greatest number of viewers, including Interstate 15 and the Primm Valley Golf Course, are represented by the KOPs. KOPs 2 and 13, directly on the project fenceline, are not included because they are expected to have few or no visitors.

Length of Time the Project is in View

The selected KOPs represent a range of different durations of view, from just a few minutes for cars on Interstate 15 to hours for hikers near Clark Mountain and the Stateline Wilderness Area.

Relative Project Size

By including views of the facility from all angles, including both horizontally and from higher and lower elevations, the selected KOPs allow comparison of the scale of the facility with respect to its surroundings.

Season of Use

The seasonal uses of consideration in the area are primarily related to recreational users, who would include golfers, hikers, and landsailors. The selected KOPs include the golf course, hiking areas, and edges of Ivanpah Playa where land sailing occurs.

Light Conditions

The selected KOPs cover the full range of locations from which the facility would be viewed during different times of the day, and during different seasons.

It should be noted that establishment of a baseline visual character and simulation of the Proposed Action and alternatives is complicated by the fact that current construction in the area is continually modifying the viewscape, presenting a moving target for the analysis. First Solar filed their most recent POD for the project in August, 2011, and BLM filed the Notice of Intent (NOI) to Prepare an EIS at that time. The baseline to be used for visual analysis is the visual characteristics of the project location at the time of BLM's NOI. However, in this case, the visual character of the area in August, 2011, was dominated by construction of the Ivanpah SEGS facility. Construction on that facility began in October, 2010, and is expected to continue into

2013, so the construction period for that facility completely overlaps the timeframe of this analysis. Because construction on Ivanpah SEGS will be completed before construction on the Stateline facility would begin, the baseline, based on the conditions at the time of the NOI, will have ceased to exist by the time project construction begins. Because Ivanpah SEGS is not yet complete, it is not possible to present photographs showing the completed facility.

To resolve this, the base photographs used for establishing the pre-Ivanpah SEGS visual characteristics of the area, and for developing visual simulations, were taken between September and December, 2010, before the visual appearance of Ivanpah SEGS construction became dominant. Although these were taken almost one year before BLM's NOI, they provide the best approximation of the visual character of the area at the time of the NOI. Then, to evaluate the future appearance of the proposed Stateline facility, the visual simulations included simulation of the final, completed Ivanpah SEGS facility, as well as the completed Stateline facility. Simulation of Ivanpah SEGS was necessary because the inclusion of the completed facility is most representative of the future appearance of the Stateline facility, but photographs of the completed facility are not yet possible.

At each KOP, the existing landscape was photographed multiple times, as follows:

- In December, 2010, the existing landscape from all 13 KOPs was photographed using a digital camera. This set of photos, provided in Appendix C, was used to establish the visual characteristics of the area before solar development began. Although construction on Ivanpah SEGS began in October, 2010, construction of the power towers and heliostats, which are the most prominent visual components of that facility, had not yet begun.
- In September to October, 2010, the existing landscape from 7 of the KOP locations was photographed with a specialized panoramic lens. This set of photos, provided in Appendix C, was used as the base for visual simulations of the Proposed Action and alternatives.
- In December, 2011, the existing landscape from all 13 KOPs was again photographed using a digital camera. These photographs established the appearance of the area during ISEGS construction. However, the appearance of the area during ISEGS construction is not relevant to this analysis, because construction will be nearly completed before construction of the Stateline facility would begin. Therefore, these photographs are not used in this analysis.

A discussion of the existing visual setting for each KOP is presented in the following paragraphs. The VRI Class III rating applies to the entire study area, including all project alternatives, as viewed from any of the KOPs discussed below. Therefore, the discussion of each individual KOP does not include a separate discussion of its VRI Class.

KOP-3 – Interstate 15 south of Primm

KOP-3 is located on I-15 approximately 0.5 miles south of Primm. The viewscape is representative for drivers and passengers driving south on I-15 into California from Nevada. The foreground is dominated by the flat, unvegetated surface of the Dry Lake bed, and includes a fence adjacent to and parallel to the highway. The middle ground includes the dark green creosote bush of the alluvial fan with Metamorphic Hill, an inselberg rising from the middle of the alluvial fan, to the right side of the view. Transmission lines enter the viewscape from behind the viewer on both the left and the right, cross the Dry Lake bed, and cross onto the alluvial fan. On the left side of the view, the dark green creosote bush has been removed from a large area in the early phases on construction on Ivanpah SEGS Unit 1. The background shows Clark Mountain. In this view, the proposed facility would be located on the right side, on the alluvial fan between the Dry Lake bed and Metamorphic Hill.

KOP-5 – Interstate 15 south of Primm Valley Golf Club

KOP-5 is located on I-15 approximately 0.5 miles south of the Primm Valley Golf Club. The view is representative of the view available to drivers and passengers on I-15 traveling north towards Nevada. The foreground shows a berm and fence adjacent to I-15, part of the infrastructure for the highway. Past the berm is the dark green creosote vegetation of the alluvial fan. The middle ground on the right side of the view shows the golf course, which includes non-native trees and white structures. The middle ground on the left side shows Metamorphic Hill. Transmission towers and lines are located between the golf course and Metamorphic Hill. The background view shows the Stateline Wilderness Area in the Mesquite Range. In this view, the proposed facility would not be seen because it would be on the other side of the golf course. Because the structures of the proposed facility are very low lying, they would not be seen above the trees of the golf course. However, in Alternative 2, the southern portion of the facility would be located in the foreground, between the viewer and the golf course.

KOP-6 – Northwest Corner of Primm Valley Golf Club

KOP-6 is located at the northwest corner of the Primm Valley Golf Club, and represents a view that may be seen from golfers using the club. The foreground shows the light gray and dark green vegetation of the alluvial fan, as well as the transmission lines that pass between the golf course and Metamorphic Hill. Metamorphic Hill is in the right middle ground. The background view includes an additional large expanse of alluvial fan leading up to the Clark Mountain Range. In this view, the proposed facility would be located on the alluvial fan to the right of Metamorphic Hill.

KOP-7 – Southwest Corner of Primm Valley Golf Club

KOP-7 is located at the southwest corner of the Primm Valley Golf Club, and represents a view that may be seen from golfers using the club. The foreground shows the light gray and dark green vegetation of the alluvial fan, as well as the transmission lines that pass between the golf course and Metamorphic Hill. The southern end of Metamorphic Hill is shown in the far right middle ground. The background view shows Clark Mountain. The southern portion of Alternative 2 would be located in the immediate foreground of this view, between the viewer and the transmission lines.

KOP-9 – Nipton Road Overpass

KOP-9 is located on the Nipton Road overpass over I-15. This view would be seen by drivers and passengers traveling north on I-15 towards Nevada, as they cross under the overpass. The foreground is dominated by the highway and a small inselberg. The large expanse of the middle ground shows the mixed light gray and dark green vegetation on the sloping alluvial fan. Features visible on the alluvial fan include unpaved roads, Metamorphic Hill, and transmission lines. The golf course is visible on the near edge of the Dry Lake bed on the right. The Dry Lake bed, crossed by I-15, can be seen on the far right. The Primm casinos and hotels are visible where I-15 crosses the far side of the Dry Lake bed. In this view, the proposed facility would be located between Metamorphic Hill and the Dry Lake.

KOP-10 – Clark Mountain Range near Benson Mine

KOP-10 is located in the Clark Mountain Range near the Benson Mine, and the view is looking towards the east. This view is representative of what would be seen from a hiker in the Clark

Mountains. Because the site is on the side of a mountain, there is no foreground view in the photograph. The large expanse of the middle ground shows light gray and dark green vegetation of the alluvial fan, crossed by transmission lines and unpaved roads. Metamorphic Hill is located on the left of the middle ground, and the golf course if located on the right. The proposed facility would be situated between Metamorphic Hill and the golf course. The far middle ground consists of the unvegetated Dry Lake bed crossed by I-15 and several transmission lines. The background shows the alluvial fan rising on the east side of Ivanpah Valley, leading up to the Lucy Gray Mountains.

KOP-12 – Stateline Wilderness Area

KOP-12 is located at the southeastern end of the Stateline Wilderness Area, and represents the view as it would be seen from hikers in that area. Like KOP 11, the foreground view shows that transmission towers and lines that pass directly adjacent to the wilderness area are very prominent. Metamorphic Hill is seen in the middle ground. The proposed facility would be located directly between the viewers and Metamorphic Hill, on both the near and far sides of the transmission lines. The background view includes additional transmission lines, as well as I-15 climbing up the alluvial fan towards the Clark Mountains on the left side.

3.18.2 Applicable Regulations, Plan, and Standards

Public agencies and planning policy establish visual resource management objectives in order to protect and enhance public scenic resources. Goals, objectives, policies, and implementation strategies and guidance are typically contained in resource management plans, comprehensive plans and elements, and local specific plans. As described elsewhere in this document and in Table 3.18-1 below, federal guidance comes from the BLM's VRM Classifications and the CDCA Plan. No state or local guidance or plans are applicable to the proposed facility. Table 3.18-1 lists the relevant plans and notes project consistency with each; for completeness, the Table includes San Bernardino County policies and ordinances, although they do not represent regulatory requirements. As discussed in Section 4.18, consistency with applicable regulations, plans, and standards is also a potential indicator of the occurrence of an adverse impact. The significance of any policy inconsistencies is also addressed in Section 4.18.

3.18.2.1 Federal

Federal Land Management and Policy Act

FLPMA is the enabling legislation establishing the Bureau of Land Management's responsibilities for lands under its jurisdiction.

Section 102 (a) of the FLPMA states that "…the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values …."

Section 103 (c) identifies "scenic values" as one of the resources for which public land should be managed.

Section 201 (a) states that "The Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resources and other values (including ... scenic values) ...."

Section 505 (a) requires that "Each right-of-way shall contain terms and conditions which will... minimize damage to the scenic and esthetic (sic) values...."

California Desert Conservation Area Plan

The proposed Stateline facility is located within the California Desert Conservation Area Plan, which is the BLM Resource Management Plan applicable to the project site (BLM 1980). While the CDCA Planning process included VRI, it did not carry VRM classes decisions forward into the Record of Decision (ROD). The BLM Needles Field Office completed an updated VRI in 2010 (BLM 2010). The location of the proposed facility site is classified in the CDCA Plan as MUC L. MUC L protects "sensitive, natural, scenic, ecological, and cultural resource values. Public lands designated as Class L are managed to provide for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished."

The CDCA Plan includes a table (Table 1) which illustrates the types of allowable land uses by MUC Class. The table specifically includes Electrical Power Generation Facilities including Wind/Solar facilities. Guidance provided under this section allows for the authorization of such facilities within MUC Class L lands in compliance with NEPA requirements.

Northern and Eastern Mojave (NEMO) Plan Amendment

The NEMO plan amendments to the CDCA Plan did not directly affect visual resource management. Among the elements of the NEMO plan amendments was designation of approved motorized vehicle trails, including three such trails within the proposed Stateline facility site. According to the NEMO Routes Designation EA, "the off-road vehicle experience of traveling historic routes provides an educational and scenic experience of the natural wonders of a harsh desert region and the elements that the pioneers and founders of the historical route had to endure." (BLM 2004).

The East Mojave Heritage Trail, a 650-mile trail identified in the NEMO Proposed Route Designation Plan Amendment as a major historical trail of scenic, historic, and Native American values, is one such designated trail within the Ivanpah Valley. However, it does not cross the proposed Stateline site and would not be affected by the project.

National Historic Preservation Act

Under regulations of the NHPA, visual impacts to a listed or eligible National Register property that may diminish the integrity of the property's "…setting… (or) feeling…" in a way that affects the property's eligibility for listing, may result in a substantial adverse effect. "Examples of adverse effects…include… Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features…" (36 CFR Part 800.5)

3.18.2.2 State

State Scenic Highway Program

The California State Department of Transportation (Caltrans) has identified a state system of eligible and designated scenic highways which, if designated, are subject to various controls intended to preserve their scenic quality (California Streets and Highways Code, Sections 260 through 263). Highway I-15 within the project viewshed is not listed as an eligible State Scenic Highway.

3.18.2.3 Local

County of San Bernardino General Plan

Various policies of the Conservation and Open Space Elements of the San Bernardino County General Plan refer to the protection of scenic resources in the project area, as described in detail in Visual Resources Table 3.18.3. In particular, Open Space Policies 5.1 through 5.3 provide protection to designated County scenic routes. Highway I-15 in the Ivanpah Valley is a designated County scenic route. Please note that the San Bernardino County General Plan is not applicable to projects located on federal lands, and thus do not represent regulatory requirements to the project.

Night Sky Protection Ordinance Ord. 3900 (San Bernardino County Code 87.0921)

This ordinance is intended "to encourage effective, non-detrimental lighting; to maintain night-time safety, utility, security and productivity; and to encourage lighting practices and systems which will minimize light pollution, glare and light trespass, conserve energy and resources and curtail the degradation of the night time visual environment…"

Table 3.18-3. Consistency with Plans

Applicable Policies	Consistency Determination	Consistent
Federal		
CDCA Plan		
VISUAL RESOURCES		
6.0 Electrical Generation Facilities, VRM Classifications, Table 1: Multiple Use Class Guidelines, Page 15		
The 2010 BLM Needles Field Office Visual Resource Inventory assigned a VRI Class III to the land area that encompasses the proposed Stateline Solar Farm project area. Because no VRM mapping or assignment has been adopted for the Ivanpah Valley area by BLM, this analysis thus refers to VRI classes. The VRM Class III Management Objective requires that a project or action partially retain the existing character of the landscape. The level of change to the landscape should be moderate. Activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.	The proposed project would occupy BLM lands in Ivanpah Valley with a VRI Class III designation. The moderate levels of visual change that would be caused by the proposed project in this area would meet the VRM Class III objective of not exceeding a moderate degree of visual change. The completed solar arrays would not have any structures greater than approximately 12 feet in height, so would not block views from any KOPs. The configuration of the solar arrays in low lying, horizontal rows would appear as a dark horizontal band that is somewhat indistinct from the surrounding landscape, so they would not create substantial levels of visual contrast.	YES
Local		
San Bernardino County General Plan (2007)		
Section VI, Open Space Element		
County Wide Goals and Policies, Pages VI-6 to VI-18		
Goal OS-5: The County will maintain and enhance the visual character of scenic routes in the County.	The proposed project would be visible from I-15, which is designated as a scenic route by the County. The project would not be perceived as maintaining or enhancing the visual character of the area as seen from I-15.	NO (note that conformance with the San Bernardino County General Plan is not a requirement for projects on federal lands)

3.19 Water Resources

This section describes the existing hydrology and water quality conditions that could be affected by implementation of the proposed Stateline Solar Farm facility. The area of interest for water resources encompasses all surface and groundwater resources that could be affected by construction, operations and maintenance, and decommissioning of the proposed facility. Because pollutants can be transported downstream or down-gradient to sensitive receiving waters, downstream receiving waters were also considered in the analysis. The current condition and quality of these water resources was used as the baseline against which to compare potential impacts of the Proposed Action, as discussed in Section 4.19. In addition, existing laws and regulations applicable to water resources in the area are described. In some cases, compliance with the existing laws and regulations would serve to reduce or avoid certain impacts that might otherwise occur with the implementation of the Proposed Action.

3.19.1 Environmental Setting

The proposed Stateline Solar Farm facility would be located in the Ivanpah Valley in the eastern Mojave Desert in San Bernardino County, California, near the California/Nevada border. The Ivanpah Valley is approximately 569,000 acres in size. Jean and Primm are the largest communities in the valley. The Stateline project would be located near Primm and the 445 acre Primm Valley Golf Club. The basin is bounded by the Clark Mountains, Ivanpah Mountains, McCullough Range, Spring Mountains, New York Mountains, Sheep Mountain, and the Bird Spring Range. Several northwest-trending faults transect the basin, including the State Line, Ivanpah, and Clark Mountain faults.

This area is located within the South Lahontan Hydrologic Region (HR), one of ten hydrologic regions in California that correspond with major watersheds and drainage areas, as established by the California DWR for management purposes. Being located within the South Lahontan HR, the Proposed Action is subject to management direction of the Water Quality Control Plan for the Lahontan Region (Lahontan 2005), under jurisdiction of the Lahontan RWQCB.

The Mojave Desert is classified as a dry-hot desert climate, with portions classified as dry-very hot desert, to indicate that at least three months have maximum average temperatures over 100.4 °F (MDAQMD CEQA Guidelines 2011). Prevailing winds in the project area are out of the west and southwest. These prevailing winds are due to the proximity of the Mojave Desert to coastal and central regions and the blocking nature of the Sierra Nevada Mountains to the north; and air masses pushed onshore in southern California by differential heating are channeled through the Mojave Desert. The Mojave Desert is separated from the southern California coastal and central California valley regions by mountains (highest elevation approximately 10,000 feet), the passes of which form the main channels for these air masses (MDAQMD CEQA Guidelines 2011). Most desert moisture arrives from infrequent warm, moist and unstable air masses from the south. The Mojave Desert averages between three and seven inches of precipitation per year (from 16 to 30 days with at least 0.01 inches of precipitation).

The following sections characterize the existing environmental setting for the proposed Stateline facility, including information relevant to surface water drainage, flooding, water quality, and groundwater resources.

3.19.1.1 Surface Water

Surface Water Setting

The proposed project would be developed on an alluvial fan in the Ivanpah Valley, which is designated as the Ivanpah Hydrologic Unit (Number 612.00) in the Water Quality Control Plan for the Lahontan Region (Lahontan 2005). The Ivanpah Valley extends across the California state line and into Nevada and is part of a larger hydrologic system that includes Roach Lake in Nevada. There are no perennial flowing surface water bodies within the valley, except for in limited areas in the mountain ranges, adjacent to springs. Seasonal springs are present along the base of the Clark Mountains, upslope and hydraulically upgradient from the proposed project site. These springs occur in areas of consolidated rock and are estimated to flow at a rate of no more than 5 gallons per minute (gpm). The discharge from the springs is inadequate to sustain surface flow for a substantial distance (Glancy 1968).

The Ivanpah Valley is topographically closed. Excess surface flow drains to the Ivanpah, Roach, and Jean Dry Lakes, where it evaporates and leaves behind a hard lakebed (desert playa). Ivanpah, Roach, and Soda Lakes are all dry alkali lake beds. Ivanpah Valley is located in both California and Nevada, while Roach Lake is located entirely in Nevada and Soda Lake is entirely in California west of the Soda Mountains. The lakes are dry throughout most of the year except in the wetter winter/spring months, and they only hold water temporarily. Each lake receives flow from various unnamed ephemeral drainages, as well as storm-generated sheet flow from surrounding alluvial fans.

Stormwater Flow

The existing stormwater flow across the proposed project area is generally towards the east, across the alluvial fan that has developed in conjunction with the uplift and erosion of the Clark Mountains. Stormwater is conveyed across the fan as sheet flow and through numerous ephemeral wash channels, and can reach the Ivanpah Dry Lake during heavy rain events. During major storm events, the ephemeral washes can flow for periods of a few hours to 24-hours with the possibility of flash floods and mass wasting. The ephemeral washes on the alluvial fan have been determined to be non-jurisdictional features by the USACE under Section 404 of the CWA (LSA 2011a) and are, therefore, waters of the State.

The proposed project area is located in Federal Emergency Management Agency (FEMA) Zone D, which is classified as area where flood hazards have not been mapped (FEMA 2008). Although a flood hazard analysis has not yet been conducted by FEMA for this area, a hydrologic study and modeling have been completed by the Applicant (Taney Engineering 2011a; Taney Engineering 2011b). The alluvial fan can be subject to intense storm water flows. Storm water flow across the active portion of the fan is controlled by runoff generated within the Clark Mountain sub-watersheds above the alluvial fan and from runoff generated on the alluvial fan itself (Taney Engineering 2011a; Taney Engineering 2011b). The Applicant has identified 6 sub-watersheds that contribute stormwater flows that could affect the proposed project area. These sub-watersheds comprise a total of 23,014 acres within the Clark Mountains and on the alluvial fan itself (Taney Engineering 2011a).

Stormwater flow in the area of the Proposed Action is affected by two features. First, Metamorphic Hill is a bedrock feature that crops out in the middle of the alluvial fan, rising approximately 300 feet above the alluvial fan surface. Being comprised of bedrock, this feature is not part of the broad, general movement of alluvial fan sediment that occurs during each stormwater flow event. As a result, Metamorphic Hill blocks stormwater flow coming from the west, and diverts the stormwater around both its north and south ends. Hydrologic analysis conducted by Taney Engineering for the Applicant indicates that flow is primarily diverted around the south end of the hill, and causes the presence of two large, incised drainage

channels referred to as the North Wash and South Wash (Taney Engineering 2011a). Being located directly adjacent to the northeast side of Metamorphic Hill, the southern part of the footprint of the Proposed Action exists in a type of drainage "shadow" on the downgradient side of the hill. In this area, Metamorphic Hill blocks the flow coming from the mountains to the west, and diverts it to the south. The project location was selected, in part, to avoid the concentrated flow in the North and South Washes.

The second feature potentially affecting stormwater flow onto the proposed facility location is the Ivanpah SEGS solar facility. Ivanpah SEGS Units 2 and 3 are located on the west side of Metamorphic Hill, and are directly upgradient of the proposed Stateline facility. The Ivanpah SEGS facility was designed as a low-impact development facility, and does not include any active stormwater management features (diversion or retention structures) within the vast heliostat fields. However, Ivanpah SEGS does include some impermeable areas and flood protection features within their power block areas. The hydrologic modeling done by Taney Engineering for the Applicant incorporated these areas into their calculations of flow conditions for the Stateline facility (Taney Engineering 2011a)

Surface Water Quality

Water quality objectives are established in the Water Quality Control Plan for the Lahontan Region (Lahontan 2005). The purpose of water quality objectives and requirements described in the Plan is to protect Designated Beneficial Uses of surface waters, which include consumptive (municipal, industrial, and irrigation) and non-consumptive (recreation and habitat) uses. The Lahontan RWQCB has established a nondegradation objective for all waters within the Lahontan Region, and this objective would be applicable to the Proposed Action. The Plan has also established numerical and narrative water quality objectives for specific water bodies, but Ivanpah Valley is not among these.

Surface waters in the Ivanpah Hydrologic Unit are designated for beneficial uses in the Water Quality Control Plan for the Lahontan Region (Lahontan 2005). The designated uses for the area are summarized in Table 3.19-1.

Table 3.19-1. Designated Beneficial Uses for Surface Waters in the Ivanpah Hydrologic Unit

Beneficial Use Designation	Description
Groundwater Recharge	Beneficial uses of waters used for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.
Flood Peak Attenuation/Flood Water Storage	Beneficial uses of riparian wetlands in flood plain areas and other wetlands that receive natural surface drainage and buffer its passage to receiving waters.
Wildlife Habitat	Beneficial uses of waters that support wildlife habitats including, but not limited to, the preservation and enhancement of vegetation and prey species used by wildlife, such as waterfowl.
Municipal and Domestic Supply	Beneficial uses of waters used for community, military, or individual water supply systems including, but not limited to, drinking water supply.
Agricultural Supply	Beneficial uses of waters used for farming, horticulture, or ranching, including, but not limited to, irrigation, stock watering, and support of vegetation for range grazing.
Water Quality Enhancement	Beneficial uses of waters that support natural enhancement or improvement of water quality in or downstream of a water body including, but not limited to, erosion control, filtration and purification of naturally occurring water pollutants, streambank stabilization, maintenance of channel integrity, and siltation control.
Cold Freshwater Habitat	Beneficial uses of waters that support cold water ecosystems including, but not limited to, reservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.

Table 3.19-1. Designated Beneficial Uses for Surface Waters in the Ivanpah Hydrologic Unit

Beneficial Use Designation	Description
Warm Freshwater Habitat.	Beneficial uses of waters that support warm water ecosystems including, but not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
Inland Saline Water Habitat	Beneficial uses of waters that support inland saline water ecosystems including, but not limited to, preservation and enhancement of aquatic saline habitats, vegetation, fish, and wildlife, including invertebrates.
Water Contact Recreation	Beneficial uses of waters used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, waterskiing, skin and scuba diving, surfing, white water activities, fishing, and use of natural hot springs.
Noncontact Water Recreation	Beneficial uses of waters used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, and aesthetic enjoyment in conjunction with the above activities.

3.19.1.2 Groundwater

Groundwater Setting

The project site is located within the Ivanpah Valley Groundwater Basin (IVGB). The IVGB covers an area of 199,000 ac. The groundwater in the project area primarily occurs in the Quaternary alluvium, including the unconsolidated sediments of the alluvial fan. Groundwater flow direction generally follows topography from all sides of the basin towards the Ivanpah Dry Lake. At the project site, this would indicate a groundwater flow direction towards the northeast. Groundwater flow directions may be impeded by the Stateline, Ivanpah, and Clark Mountain Faults (DWR 2004). The depth to groundwater in the basin varies from less than 100 to 715 feet below ground surface (bgs), with depth increasing upslope along the alluvial fan (Broadbent 2002). Near the proposed project site, groundwater depths in Primm wells WP-5 and WP-6 are in the range of 100 feet bgs (Broadbent 2002).

Groundwater in the IVGB is unconfined with several local semi-confined areas, such as in the vicinity of Jean Dry Lake. Transmissivity of the IVGB aquifer, estimated from well tests, ranges from 2,300 to 100,000 gallons per day per foot (gpd/ft). Higher transmissivity values occur in the southern (California) portion of the basin. On average, transmissivity across the IVGB appears to be on the order of 20,000 gpd/ft (URS 1990). The storage capacity on the California side of the valley of the IVGB is estimated to be 3.09 million acre-feet (DWR 2004).

There is no underflow water supply to the basin (Glancy 1968), so all groundwater is supplied by precipitation that falls within the basin. The principle source of recharge is percolation of runoff through alluvium within Wheaton Wash and at the base of the bordering mountain ranges. Groundwater discharge from the basin occurs mainly through pumping and underflow towards the Las Vegas Valley (Glancy 1968).

Local subsidence in the form of sinkholes has discussed in Section 3.14. Broadbent (2009) considered the potential for groundwater extraction and lowering of the water table associated with the Primm Casino and/or Primm Valley Golf Course wells to have caused the subsidence. However, the report concluded that the groundwater extraction was not the cause for two reasons. First, the amount of drop in the water table in the area is in the range of 5 feet, and this is much lower than the amount of drop observed in other locations where groundwater extraction is known to have resulted in subsidence. The second observation in the Broadbent (2009) report is that the area of subsidence is located more than 3 miles from the Primm Casino and Primm Valley Golf Course wells.

Groundwater Use

Groundwater in the Ivanpah Hydrologic Unit is designated for beneficial uses in the Water Quality Control Plan for the Lahontan Region (Lahontan 2005). The designated uses for the area are summarized in Table 3.19-2.

Table 3.19-2. Designated Beneficial Uses for Groundwater in the Ivanpah Hydrologic Unit

Beneficial Use Designation	Description
Municipal and Domestic Supply	Beneficial uses of waters used for community, military, or individual water supply systems including, but not limited to, drinking water supply.
Agricultural Supply	Beneficial uses of waters used for farming, horticulture, or ranching, including, but not limited to, irrigation, stock watering, and support of vegetation for range grazing.
Industrial Service Supply	Beneficial uses of waters used for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, geothermal energy production, hydraulic conveyance, gravel washing, fire protection, and oil well repressurization.
Freshwater Replenishment	Beneficial uses of waters used for natural or artificial maintenance of surface water quantity or quality (e.g., salinity).

Groundwater in the area of the proposed project is used for these beneficial uses. Figure 3.19-1 shows locations of groundwater production and monitoring wells, along with the most recent Total Dissolved Solids (TDS) concentrations measured in these wells. Table 3.19-3 shows the estimated groundwater pumping rate for those wells.

Groundwater was formerly pumped from the Colosseum 1 Colosseum 2 wells for use by the Colosseum Mine, located in the Clark Mountains. This use of these wells was ceased when the mine closed in the early 1990s. Wells PVGC-7, PVGC-8, and PVGC-9 were installed in 1995 to supply water for irrigation of the Primm Valley Golf Course. By 1998, the golf course had purchased the Colosseum wells, and now uses those wells for their water source.

In 1989, Whiskey Pete's (the first of the Primm resort facilities) installed wells WP-5 and WP-6 to provide water for domestic use at the resorts. These wells also supply water to the NV Energy Walter Higgins Power Generating Station.

The Ivanpah SEGS facility began construction in 2010. The plan for that facility included installation of two groundwater production wells. Water use from these wells is estimated to be 77 acre feet per year (ac-ft/yr) throughout the operation of Ivanpah SEGS.

Table 3.19-3. Groundwater Use in Southern Ivanpah Valley

User	Distance from Proposed Action (miles)	Pump Rate (ac-ft/yr)	Consumptive Use (ac-ft/yr)
Primm Casinos (WP-5 and WP-6)	0	860[1]	510
Primm Valley Golf Course (Colosseum 1, Colosseum 2, PVGC-7, PVGC-8, and PVGC-9)	1-1.5	1,800[2]	1,220
Ivanpah SEGS	2	100[3]	100
Molycorp	17	847[4]	847
Desert	18	50[1]	30
Nipton	24	30[1]	20

Table 3.19-3. Groundwater Use in Southern Ivanpah Valley

[1] Source: *Average use for 16-year period from 1990-2005.* West Yost 2011a
[2] Source: Permitted value from Broadbent 2012
[3] Source: BLM 2010. It is assumed the phase of construction requiring the greatest water use for Ivanpah SEGS would be completed by the time Stateline begins construction. Therefore, this rate is the estimated annual operation rate.
[4] Source: San Bernardino County 2010. The wells are currently inactive, but have historically pumped up to 1,200 ac-ft/yr. The 2010 Mitigated Negative Declaration assumes a potential maximum freshwater use rate of 525 gpm, which equates to 847 ac-ft/yr if pumped all year. Some portion of this would likely be accessed from Molycorp's Shadow Valley wells, so 847 ac-ft/yr is an overestimate.

Groundwater Quality

Groundwater quality within the IVGB is highly variable. In most of the basin, the groundwater is dominated by sodium and calcium as the cations and bicarbonate as the major anion. Water quality in the washes and alluvial fan areas is good, and supports groundwater production wells for the Primm resorts, Primm Valley Golf Course, Molycorp mine operations, and scattered residents. Overall, the groundwater in the basin is rated as marginal to inferior for domestic and irrigation use due to elevated fluoride and sodium concentrations (DWR 2004).

Water quality in the basin decreases with proximity to the Dry Lake due to evaporation and concentration of salts, and the water quality becomes dominated by sodium chloride (DWR 2004; West Yost 2011a). TDS concentrations range from 300 to 500 milligrams per liter (mg/L) in most of the basin, but evaporation at the Dry Lake bed has resulted in TDS concentrations in the center of the Dry Lake as high as 50,000 mg/L. This feature can be seen in Table 3.19-4, which shows TDS concentrations in wells near the proposed project site. Well locations, along with the most recent TDS concentrations, are shown in Figure 3.19-1.

Table 3.19-4. Total Dissolved Solids Concentrations in Groundwater

Well	Former TDS Concentration (Date)[1]	TDS Concentration July 2008
WP-5	150-180 mg/L (1994)	560 mg/L
WP-6	100 mg/L (1994)	760 mg/L
Colosseum 1	395 mg/L (1998)	450 mg/L
Colosseum 2	382 mg/L (1998)	350 mg/L
PVGC-7	1,355 mg/L (1995)	1,300 mg/L
PVGC-8	1,004 mg/L (1996)	940 mg/L
PVGC-9	365 mg/L (1997)	720 mg/L

[1]Source: Broadbent 2002

The wells further from the Dry Lake (WP-5 and WP-6) originally had the lowest TDS concentrations, in the range of 100-180 mg/L. The Colosseum wells, closer to the Dry Lake, had concentrations in the range of 350-400 mg/L. Those closest to the Dry Lake (PVGC-7 and PVGC-8) had original TDS concentrations over 1,000 mg/L.

3.19.2 Applicable Regulations, Plan, and Standards

3.19.2.1 Federal

Clean Water Act. The CWA (33 U.S.C. Section 1251 et seq.) was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the U.S. and has given the EPA the authority to implement pollution control programs. The CWA requires states to set standards to protect, maintain, and restore water

quality through the regulation of point source and certain non-point source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). In California, NPDES permitting authority is delegated to, and administered by, the nine RWQCBs. The Proposed Action is within the jurisdiction of the Lahontan RWQCB.

Section 402 of the Clean Water Act authorizes the California SWRCB to issue NPDES General Construction Storm Water Permit (Water Quality Order 99-08-DWQ), referred to as the "General Construction Permit." Construction activities can comply with and be covered under the General Construction Permit provided that they meet the following requirements.

- Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting storm-water and with the intent of keeping all products of erosion from moving offsite into receiving waters.
- Eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the nation.
- Perform inspections of all BMPs.

Projects that disturb one or more acres, including the Proposed Action, are required to obtain NPDES coverage under the Construction General Permits. The EPA's NPDES Phase II Final Rule and the SWRCB NPDES General Permit No. CAS000004, "Waste Discharge Requirements for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) General Permit (referred to as the "MS4 General Permit") require that the County, as the MS4 operator, implement a Stormwater Management Program (SWMP) that reduces the discharge of pollutants to the "maximum extent practicable", that protects water quality, and that satisfies the requirements of the CWA according to California's MS4 General Permit (SWRCB 2004). As such, the administration of NPDES regulations for the Proposed Action is the duty of San Bernardino County.

Section 401 of the CWA requires that any activity, including river or stream crossing during road, pipeline, or transmission line construction, which may result in discharges into a State waterbody, must be certified by the RWQCB. This certification ensures that the proposed activity does not violate State and/or federal water quality standards. The limits of non-tidal waters extend to the Ordinary High Water Mark, defined as the line on the shore established by the fluctuation of water and indicated by physical characteristics, such as natural line impressed on the bank, changes in the character of the soil, and presence of debris.

Section 404 of the CWA requires a permit for construction activities involving placement of any kind of fill material into waters of the U.S. or wetlands. *The Applicant's Jurisdictional Delineation Report (LSA 2011b) was submitted to the USACE for their determination. In a letter dated December 2, 2012, the USACE concurred that the project is not subject to USACE jurisdiction under Section 404, and that a Section 404 permit is not required (Swenson 2012). Both the Applicant's Jurisdictional Delineation Report and the USACE response letter are provided in Appendix H.*

Section 303(d) of the CWA (CWA, 33 U.S.C. 1250, et seq., at 1313(d)) requires states to identify "impaired" waterbodies as those which do not meet water quality standards. States are required to compile this information in a list and submit the list to the EPA for review and approval. This list is known as the Section 303(d) list of impaired waters. As part of this listing

process, states are required to prioritize waters and watersheds for future development of Total Maximum Daily Load (TMDL) requirements. The SWRCB and RWQCBs have ongoing efforts to monitor and assess water quality, to prepare the Section 303(d) list, and to develop TMDL requirements.

National Flood Insurance Program (NFIP). The NFIP, implemented by the Congress of the United States in 1968, enables participating communities to purchase flood insurance. Flood insurance rates are set according to flood-prone status of property as indicated by Flood Insurance Rate Maps (FIRM) developed by the Federal Emergency Management Agency. FIRMs identify the estimated limits of the 100-year floodplain for mapped watercourses, among other flood hazards. As a condition of participation in the NFIP, communities must adopt regulations for floodplain development intended to reduce flood damage for new development through such measures as flood proofing, elevation on fill, or floodplain avoidance.

U.S. Safe Drinking Water Act (SDWA), Section 1424(e). Section 1424(e) of the SDWA established the EPA Sole Source Aquifer (SSA) Program. A SSA is an aquifer which supplies more than 50 percent of a community's drinking water. The boundaries of designated SSAs include the entire surface recharge area for the aquifer, and can extend beyond the underlying aquifer. Since 1977, the SSA Program has led to the designation of 64 SSAs across the United States. Under the SSA Program, the EPA conducts environmental review of any project which is located within the surface recharge area of a designated SSA and which is financially assisted by federal grants or federal loan guarantees. These projects are evaluated to determine if they have the potential to contaminate a designated SSA; if the EPA determines that such potential exists, the project should be modified to reduce or eliminate the risk. This does not mean that the SSA Program can delay or stop development of projects or impact any direct federal environmental regulatory or remedial programs such as permit decisions. *The Project site is not located in the area of a Sole Source Aquifer.*

Executive Order 11988, Floodplain Management. This order directs all federal agencies to avoid the long-term and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.

3.19.2.2 State

Senate Bill (SB) 610, Water Supply Assessment. SB 610 was passed on January 1, 2002, amending California law to require detailed analysis of water supply availability for certain types of large development projects. The primary purpose of SB 610 is to improve the linkage between water and land use planning by ensuring greater communication between water providers and local planning agencies, and ensuring that land use decisions for certain large development projects are fully informed as to whether sufficient water supplies are available to meet project demands. SB 610 requires the preparation of a Water Supply Assessment for a project that is subject to CEQA and meets certain requirements, as described below with regards to the proposed Stateline facility.

1. Is the proposed project subject to CEQA?

Yes. As presented in this EIR, the Proposed Action requires issuance of permits by a public agency and is, therefore, subject to CEQA.

2. Is the proposed project a "Project" under SB 610? A proposed project would meet the definition of "Project" per Water Code Section 10912 if it is:

- A proposed residential development of more than 500 dwelling units;
- A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space;
- A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space;
- A proposed hotel or motel, or both, having more than 500 rooms;
- A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area;
- A mixed-use project that includes one or more of the projects specified in this subdivision; or
- A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

Based on the definition of "project" as presented above, the proposed Stateline facility meets the intent of the definition, because it an industrial facility occupying more than 40 acres of land.

3. Is there a public water system that will service the proposed project?

No. Water service during construction and operation of the Proposed Action would be obtained from two newly installed private wells.

4. Is there a current Urban Water Management Plan that accounts for the project demand?

No, there is no Urban Water Management Plan for the unincorporated portion of San Bernardino County where the Proposed Action is located.

5. Is groundwater a component of the supplies for the project?

Yes, water supply requirements for the Proposed Action or an alternative would be met using water pumped from two new groundwater wells located at the facility. Over the 2-4 year construction period, approximately 1,900 acre-feet of water would be required for soil compaction and dust suppression. In addition, the O&M building would require approximately 20 ac-ft per year for sanitary purposes. The expected operational lifetime of the Proposed Action is 30 years. Therefore, total demand for the O&M building would be 600 acre-feet over the operational lifetime of the Proposed Action.

As described above, the proposed Stateline facility is considered a "project" as defined under SB-610, and a full Water Supply Assessment was developed by the Applicant (LSA 2011b). Potential impacts to water supply are addressed under in Section 4.19 of this *PA and* EIS/EIR.

Porter-Cologne Water Quality Control Act. The SWRCB regulates water quality through the Porter-Cologne Water Quality Act of 1969, which contains a complete framework for the regulation of waste discharges to both surface waters and groundwater of the State. On the

regional level, the Proposed Action falls under the jurisdiction of the Lahontan RWQCB, which is responsible for the implementation of State and federal water quality protection statutes, regulations and guidelines. The Lahontan RWQCB has developed the Water Quality Control Plan for the Lahontan Region (Lahontan 2005) to describe how the quality of the surface and groundwaters should be managed to provide the highest water quality reasonably possible. The Plan lists the various beneficial uses of surface water and groundwater water within the region, describes the water quality which must be maintained to allow those uses, describes the programs, projects, and other actions which are necessary to achieve the standards established in this plan, and summarizes plans and policies to protect water quality. *Developments which impact jurisdictional waters through alteration of streambeds, land disturbance of one or more acre, or discharge of low threat wastes to land or surface water would be subject to Water Board Waste Discharge Requirements (WDRs), including implementation of a Storm Water Pollution Prevention Plan.*

California Fish and Game Code. Section 1602 of the California Fish and Game Code protects the natural flow, bed, channel, and bank of any river, stream, or lake designated by the CDFW in which there is, at any time, any existing fish or wildlife resources, or benefit for the resources. Section 1602 applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the State, and requires any person, State, or local governmental agency, or public utility to notify the CDFW before beginning any activity that will:

- Substantially divert or obstruct the natural flow of any river, stream or lake;
- Substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or
- Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

During final engineering and design of the Proposed Action, if it is determined that any project-related actions would have the potential to necessitate a Streambed Alteration Agreement, then such an agreement would be prepared and implemented prior to construction of the Proposed Action, thus maintaining compliance with Section 1602 of the California Fish and Game Code. A Streambed Alteration Agreement is required if the CDFW determines the activity could substantially adversely affect an existing fish and wildlife resource. The agreement includes measures to protect fish and wildlife resources while conducting the project. *It is likely that CDFW will require a Streambed Alteration Agreement for the Project. Therefore, the Applicant would be required to submit a Notification of Lake or Streambed Alteration to CDFW in connection with the Project.* The CDFW must comply with CEQA before it may issue a final Lake or Streambed Alteration Agreement; therefore, the CDFW must wait for the lead agency to fully comply with CEQA before it may sign the draft Lake or Streambed Alteration Agreement, thereby making it final.

California Water Code §13260. California Water Code §13260 requires that any person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the State, other than into a community sewer system, must submit a report of waste discharge to the applicable RWQCB. Any actions related to the Proposed Action that would be applicable to California Water Code §13260 would be reported to the Lahontan RWQCB.

California Water Code §13751. California Water Code §13751 requires a Report of Well Completion to be filed with the Department of Water Resources within 60 days of well

completion. New wells must comply with California Department of Water Resources Well Standards as described in Water Resources Bulletins 74-81 and 74-90.

3.19.2.3 Local

Floodplain Management

The San Bernardino County Flood Control District was formed as an urgency and progressive measure for the preservation and promotion of public peace, health, and safety as a direct aftermath of disastrous 1938 floods. The District exercises control over all main streams in the County, acquires a ROW for all main channels, constructs channels, and has carried out an active program of permanent channel improvements in coordination with the USACE. The District administers encroachment permits needed for flood channel crossings or any work within the district's ROW, should they be required.

Stormwater Management

Currently, the County of San Bernardino follows state standards for water quality, and does not have their own specific standards. During construction, projects will be required to obtain coverage under the state's General Permit for Construction Activities that is administered by the California Regional Water Quality Board, RWQCB. Stormwater management measures will be required to be identified and implemented that will effectively control erosion and sedimentation and other construction-based pollutants during construction. Other management measures, such as construction of detention basins, will be required to be identified and implemented that will effectively treat pollutants that would be expected for the post-construction land use. Because projects will be subject to regulatory requirements, impacts to water quality standards or waste discharge requirements related to implementation of the General Plan are considered less than significant. All individual construction projects over one-acre in size that are implemented under the 2007 County of San Bernardino General Plan are required to have coverage under the state's General Permit for Construction Activities. As stated in the Permit, during and after construction, BMPs will be implemented to reduce/eliminate adverse water quality impacts resulting from development. Compliance with applicable state and local water quality regulations will ensure that impacts to water quality are less than significant.

3.20 Wild Horse and Burro

This section describes baseline conditions to support BLM's analysis of the impact of the Proposed Action and alternatives on wild horses and burros (see Section 4.20). Wild horses and burros are protected by the Wild and Free-Roaming Horse and Burro Act of 1971 (P.L. 92-195), as amended by the FLPMA and the Public Rangelands Improvement Act of 1978 (P.L. 95-514), which declares these animals an integral part of the public land resources. Through the Act, Congress declared: "It is the policy of Congress that wild free-roaming horses and burros shall be protected from capture, branding, harassment, or death; and to accomplish this they are to be considered in the area where presently found, as an integral part of the natural system of the public lands" and are to be managed "in a thriving natural ecological balance." Proper management is required to achieve and maintain population levels to ensure healthy herds and animals and to maintain a thriving natural ecological balance through reduction or elimination of conflicts now creating severe adverse impacts on other highly valued natural resources, especially wildlife.

3.20.1 Environmental Setting

Wild burros inhabiting the United States are descendants of the Nubian and Somali wild ass (*Equus asinus*) of northeastern Africa. The burro was domesticated over 5,000 years ago in Africa and used as a beast of burden. Spanish explorers introduced the burro as a domesticated animal to North America in the 16th century. Wild burro populations became established in the arid southwest as a result of domestic escapees and from burros being intentionally turned loose when they were no longer needed.

The CDCA Plan established 17 Herd Management Areas (HMAs), including the Clark Mountain HMA, which includes the location of the Proposed Action. The Clark Mountain HMA, which encompasses 233,407 acres in the northern and eastern portions of the Clark Mountain Range, is managed by the BLM, and is covered under BLM's East Mojave Herd Management Area Plan. No wild horses have been documented in the Clark Mountain HMA, but burros have been observed near the proposed project location as recently as 2011.

Historically, BLM management of this herd has included the removal of burros to maintain population levels at the established an Appropriate Management Level (AML) of 44 burros. There was a burro gather conducted in April 2001, where 79 burros were removed from the east side of Clark Mountain. The gathered burros were placed in the BLM's National Wild Horse and Burro Adoption Program.

A component of the NEMO Plan Amendment (BLM 2002) is the reduction of the AML for burros in this area of the HMA from 44 to 0. The purpose of this amendment was to reduce grazing and therefore assist the recovery of desert tortoise. In implementation of the NEMO Plan Amendment, nearly 100 burros were removed by BLM in January 2007. Burros are still known to exist in this area, with burros observed a few miles to the west in Wheaton Wash in 2011. Although BLM plans to remove the remaining burros in the future pursuant to a separate gather decision, the remaining burros are still protected by the provisions of the Wild and Free-Roaming Horses and Burros Act.

3.20.2 Applicable Regulations, Plan, and Standards

The BLM administers wild horses and burros as guided by the Wild and Free-Roaming Horse and Burro Act of 1971. This includes the management of Herd Areas (HA) and HMAs. HAs are those geographic areas where wild horses and/or burros were found at the passage of the Wild Free-Roaming Horse and Burro Act in 1971. HMAs are those areas within HAs where the

decision has been made, through Land Use Plans, to manage for populations of wild horses and/or burros.

BLM regulations pertaining to wild horses and burros are specified in 43 CFR Part 4700, and the 4700 BLM Manual Series prescribes the authorities, objectives, and policies that guide the protection, management, control, and disposition of wild horses and burros.

The CDCA Plan included a Wild Horse and Burro Element which contains the following goals:

- provide year-long food requirements of wild horses and burros;
- provide adequate cover for wild horses and burros;
- provide adequate living space for wild horses and burros; and
- protect wild horses and burros on public lands.

The Public Rangelands Improvement Act modified the Wild and Free-Roaming Horse and Burros Act by defining “excess animals”, and by modifying inventory procedures and adoption standards.

The CDCA Plan established 17 HMAs where populations of wild horses and burros would be managed and protected. Components of some of the HMAs, including boundaries and AMLs, were revised through the NEMO Plan amendments to the CDCA Plan. This included a reduction in the AML for the Clark Mountain HMA from 44 to 0.

3.21 Wildland Fire

This section describes baseline conditions to support BLM's analysis of the impact of the Proposed Action and alternatives on wildland fire (see Section 4.21).

3.21.1 Environmental Setting

The behavior and characteristics of wildfires are dependent on a number of biophysical and anthropogenic (human-caused) factors. The biophysical variables are fuels (including composition, cover, and moisture content), weather conditions (particularly wind velocity and humidity), topography (slope and aspect), and ignition sources (e.g., lightning). The anthropogenic variables are ignitions (e.g., arson, smoking, and power lines) and management (wildfire prevention and suppression efforts).

Vegetation with low moisture content is more susceptible to ignition and burns more readily than vegetation with higher moisture content. Grasses tend to ignite more easily and burn faster, but tend to burn for a shorter duration than woody vegetation such as shrubs and trees. Continuity of fuels helps sustain wildland fires. Dense vegetation tends to carry a fire farther than patchy vegetation. The presence of invasive annual grasses, however, can provide fuel connectivity in patchy desert shrublands that would otherwise provide inconsistent fuel for a wildland fire. High winds provide oxygen to wildfires and can also blow glowing embers off burning vegetation to areas far ahead of the front of a fire, allowing fires to jump fuel breaks in some cases. Conditions of low relative humidity will dry out fuels, increasing the likelihood of ignition. Finally, steep slopes and slopes with exposure to wind will carry fires rapidly uphill, and fires that are extinguished in mountainous areas are often contained along ridgelines.

Vegetation at the proposed Stateline project site consists of barren areas and sparsely vegetated creosote brush scrub. Topography at the project site is nearly level, sloping gently towards the Dry Lake Bed to the east.

Fire Hazard Severity Zones (FHSZs) are areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors that have been mapped by the California Department of Forestry and Fire Protection (CAL FIRE) under the direction of PRC 4201-4204 and Government Code 51175-89. FHSZs are ranked from moderate to very high and are categorized for fire protection as within a Federal responsibility area (FRA) under the jurisdiction of a federal agency, within a State responsibility area (SRA) under the jurisdiction of CAL FIRE, or within a local responsibility area (LRA) under the jurisdiction of a local agency. The Stateline Solar facility site is located in a FRA under the jurisdiction of BLM, and the site is within a moderate FHSZ (CAL FIRE 2012). There are no areas with a high FHSZ in the vicinity of the project site.

According to the Nevada Community Wildfire Risk/Hazard Assessment Project, the area near Primm, Nevada, is classified as a low hazard community with respect to fire, including low interface fuel hazard condition, low ignition risk, and low community hazard rating (Resource Concepts, Inc. 2005). Although this assessment was developed using a methodology from outside of San Bernardino County and outside of the state of California, the assessment provides information suggesting that the fire risk at the proposed facility site, located approximately 2 miles from Primm, is low.

The project area is within the area covered by the BLM CDD and Needles Field Office Fire Management Plan (BLM 2004). The CDD Fire Management Plan addresses management and suppression of wildfires, and does not address incidents on specific facilities such as power plants. The Plan identifies Fire Management Units (FMUs) within the CDD, and discusses characteristics, objectives, and strategies for each area. The proposed Stateline Solar Farm facility would be located in the Mesquite FMU, Number CA-690-05. The Plan classifies the area that includes the proposed facility as Fire Regime V, Condition Class I, as having little or no fire

history. In this area, seasonal winter and spring rains may allow grasses, including invasive species (such as Red Brome) to become established, and these can create a fire threat through the summer months. Should a fire occur in the area that is not specific to the facility, it would be addressed by BLM, not by the applicant, and it would be addressed in conformance with the Fire Management Plan.

Fire support services to the site itself would be under the jurisdiction of the San Bernardino County Fire Department (SBCFD). Station 53 is 40 miles from the project site, located at 65 Kingston Circle, Baker, California, and would be the first responder to the facility, with a response time of approximately 45 minutes. The SBCFD also has a Mutual Aid Agreement with Clark County (Nevada) Fire Department for responses requiring more assistance, but this assistance is voluntary.

The Applicant would implement a Fire Prevention Plan for construction and operations. The plan would comply with San Bernardino County regulations, and would include the following elements:

- Design of a road network and Traffic Control Plan that would ensure adequate emergency vehicle access to the site;
- Energizing electrical equipment only after final inspection and approval;
- Monitoring of fire risks during construction and operations to identify and address risks; and
- Use of non-toxic, mineral oil-based coolant that is non-flammable and biodegradable.

During construction, water holding basins constructed for storing water for dust suppression would also act as fire water storage. During operations, a 5,000 gallon aboveground water storage tank would serve to store water for fire suppression.

3.21.1.1 Fire History

Between 1900 and 2011 only two ignitions occurred in or near the project area: the Yates fire (1992) and the Stuck fire (2006). Both fires were human-caused (BLM GIS ignitions database accessed 2012 07 20).

3.21.2 Applicable Regulations, Plan, and Standards

3.21.2.1 Federal

Federal Energy Regulatory Commission

The Federal Energy Regulatory Commission (FERC) requires utilities to adopt and maintain minimum clearance standards between vegetation and transmission voltage power lines. These clearances vary depending on voltage. In most cases, however, the minimum clearances required in state regulations are greater than the federal requirement. In California for example, the state has adopted General Order 95 rather than the North American Electric Reliability Corporation (NERC) Standards as the electric safety standard for the State. Since the state regulations meet or exceed the FERC standards, the FERC requirements are not discussed further in this section, as compliance with the state requirements will ensure that the federal requirements are met.

Federal Wildland Fire Management Policy

The Federal Wildland Fire Management Policy was developed in 1995 and updated in 2001 by the National Wildfire Coordinating Group, a federal multi-agency group that establishes

consistent and coordinated fire management policy across multiple federal jurisdictions. An important component of the Federal Wildland Fire Management Policy is the acknowledgement of the essential role of fire in maintaining natural ecosystems. The Federal Wildland Fire Management Policy and its implementation are based on the following guiding principles:

- Firefighter and public safety is the first priority in every fire management activity.
- The role of wildland fire as an essential ecological process and natural change agent will be incorporated into the planning process.
- Fire management plans, programs, and activities support land and resource management plans and their implementation.
- Sound risk management is a foundation for all fire management activities.
- Fire management programs and activities are economically viable, based upon values to be protected, costs, and land and resource management objectives.
- Fire management plans and activities are based upon the best available science.
- Fire management plans and activities incorporate public health and environmental quality considerations.
- Federal, State, tribal, local, interagency, and international coordination and cooperation are essential.
- Standardization of policies and procedures among federal agencies is an ongoing objective.

International Fire Code

Created by the International Code Council, the International Fire Code addresses a wide array of conditions hazardous to life and property including fire, explosions, and hazardous materials handling or usage. The International Fire Code places an emphasis on prescriptive and performance-based approaches to fire prevention and fire protection systems. Updated every three years, the International Fire Code uses a hazards classification system to determine the appropriate measures to be incorporated in order to protect life and property (often times these measures include construction standards and specialized equipment). The International Fire Code uses a permit system (based on hazard classification) to ensure that required measures are instituted.

North American Electric Reliability Corporation Standards

The NERC is a nonprofit corporation comprising 10 regional reliability councils. The overarching goal of NERC is to ensure the reliability of the bulk power system in North America. To achieve its goal, the NERC develops and enforces reliability standards, monitors the bulk power systems, and educates, trains, and certifies industry personnel (NERC 2012). In order to improve the reliability of regional electric transmission systems and in response to the massive widespread power outage that occurred on the Eastern Seaboard, NERC developed a transmission vegetation management program that is applicable to all transmission lines operated at 200 kV and above to lower voltage lines designated by the Regional Reliability Organization as critical to the reliability of the electric system in the region. The plan became effective on April 7, 2006 and establishes requirements of the formal transmission vegetation management program. The Plan includes identifying and documenting clearances between vegetation and any overhead, ungrounded supply conductors, while taking into consideration transmission line voltage, the effects of ambient temperature on conductor sag under maximum

design loading, fire risk, line terrain and elevation, and the effects of wind velocities on conductor sway (NERC 2006). The clearances identified must be no less than those set forth in the Institute of Electrical and Electronics Engineers Standard 516-2003 (*Guide for Maintenance Methods on Energized Power Lines*) (NERC 2006).

Institute of Electrical and Electronics Engineers Standard 516-2003

The Institute of Electrical and Electronics Engineers is a leading authority in setting standards for the electric power industry. Standard 516-2003, *Guide for Maintenance Methods on Energized Power Lines*, establishes minimum vegetation-to-conductor clearances in order to maintain electrical integrity of the electrical system.

3.21.2.2 State

California Fire Code

The California Fire Code is contained within Chapter 9 of Title 24 of the California Code of Regulations (CCR). Based on the International Fire Code, the California Fire Code is created by the California Buildings Standards Commission and regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. Similar to the International Fire Code, the California Fire Code and the California Building Code use a hazards classification system to determine the appropriate measures to incorporate to protect life and property.

California Health and Safety Code

State fire regulations are established in Section 13000 of the California Health and Safety Code. The section establishes building standards, fire protection device equipment standards, high-rise building and childcare facility standards, interagency support protocols, and emergency procedures. Also, Section 13027 states that the state fire marshal shall notify industrial establishments and property owners having equipment for fire protective purposes of the changes necessary to bring their equipment into conformity with, and shall render them such assistance as may be available in converting their equipment to, standard requirements.

California Fire Plan

The California Fire Plan is the statewide plan for reducing the risk of wildfire. The basic principles of the Fire Plan are as follows:

- Involve the community in the fire management planning process;
- Assess public and private resources that could be damaged by wildfires; and
- Develop pre-fire management solutions and implement cooperative programs to reduce community's potential wildfire losses.

One of the more important objectives of the plan regards pre-fire management solutions. Included within the realm of pre-management solutions are fuel breaks, the establishment of Wildfire Protection Zones, and prescribed fires to reduce the availability of fire fuels. In addition, the Fire Plan recommends that clearance laws, zoning, and related fire safety requirements implemented by state and local authorities address fire-resistant construction standards, hazard reduction near structures, and infrastructure (California Board of Forestry 2010). The Fire Plan does not contain any specific requirements or regulations. It acts as more of an assessment of current fire management practices and standards and makes recommendations on how best to improve the practices and standards in place.

California Public Utilities Commission (CPUC) General Order (GO) 95: Rules for Overhead Electric Line Construction

GO 95 is the key standard governing the design, construction, operation, and maintenance of overhead electric lines in the State. It was adopted in 1941 and updated most recently in 2006. GO 95 includes safety standards for overhead electric lines, including minimum distances for conductor spacing, minimum conductor ground clearance, standards for calculating maximum sag, electric line inspection requirements, and vegetation clearance requirements.

Rule 31.2, Inspection of Lines, requires that lines be inspected frequently and thoroughly for the purpose of ensuring that they are in good condition, and that lines temporarily out of service be inspected and maintained in such condition as not to create a hazard.

Public Resources Code 4291

Public Resources Code 4291 provides that a person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land that is covered with flammable material, shall at all times maintain defensible space of 100 feet from each side and from the front and rear of the structure, but not beyond the property line.

3.21.2.3 Local

San Bernardino County General Plan

Goals S3 of the Safety Element of the San Bernardino County General Plan reads “The County will protect its residents and visitors from injury and loss of life and protect property from fires”. The Plan establishes policies and describes programs intended to accomplish this goal. The San Bernardino County General Plan is not applicable to projects located entirely on federal lands.

3.22 Wildlife Resources

The section describes the environmental setting and wildlife resources present or with potential to occur within the approximately 2,143-ac proposed project site (Alternative 1), including 2,084 acres for the Stateline Solar Farm (north of the existing transmission line in this area), 18 acres for the access corridor, and 41 acres for the transmission corridor. The Project Study Area covers approximately 5,850 acres and encompasses the areas of the Proposed Action and all action alternatives. Information in this section is largely based on the *Biological Resources Technical Report – Stateline Solar Farm Project* (First Solar *2013e*). A detailed description of survey methods utilized by the Applicant to identify the biological resources within the Project can be found in the *Biological Resources Technical Report – Stateline Solar Farm Project* (First Solar *2013e*).

During the scoping period, government agencies and members of the public identified the following issues and concerns related to biological resources: potential impacts to protected wildlife species and their habitats including bighorn sheep, desert tortoise, migratory birds, the golden eagle, and rare plants; and cumulative effects of developments within the Ivanpah Valley.

3.22.1 Environmental Setting

The Project site is located in the Ivanpah Valley in San Bernardino County, California near the boundary of California and Nevada, approximately 2 miles southwest of the town of Primm, Nevada. The proposed project location is shown in Figure 1-1. Ivanpah Valley lies within the larger Mojave Desert, an ecoregion extending across southeastern California, southern Nevada, southwestern Utah, and northwestern Arizona. The Mojave Desert is characterized by interior mountain ranges and valleys, with elevations generally ranging between 2,000 and 5,000 feet. At lower elevations, the desert is dominated by creosote bush (*Larrea tridentata*), named for its distinctive odor. The lowest points in the desert are occupied by playas or alkali sinks, dry lake beds where evaporation leaves wide expanses of soils with high alkalinity or salinity.

Originally proposed in 2008, the Project site has since changed in size and shape. To ensure that the resources within the Project site were thoroughly documented and to allow for flexibility in site layout design, a large Project Study Area covering approximately 5,850 acres was identified for characterization. Located within the Ivanpah Valley, the Project Study Area consists of relatively flat, undeveloped land, along the western flank of the Ivanpah Dry Lake. The Primm Valley Golf Club is adjacent to the southeast corner of the Study Area. There are no known residences within 0.5 mile of the boundary of the Study Area.

The Project Study Area is located outside the boundaries of an ACEC, DWMA, BLM wilderness area, or USFWS designated critical habitat unit (CHU) for desert tortoise. The Study Area is less than 2 miles west of the Ivanpah Valley DWMA/ACEC and approximately 3.5 miles northwest from the Ivanpah CHU. The Clark Mountain ACEC is approximately 4 miles west of the site. The BLM-designated Stateline Wilderness Area is located less than one mile northwest of the Study Area. The Mesquite Wilderness Area is located immediately west of the Stateline Wilderness Area and located approximately 6 miles west of the Study Area. Human disturbances within the Study Area include moderate levels of OHV activity, existing utility corridors (i.e., overhead power transmission lines) and associated access roads.

Like most areas of the Mojave Desert, rainfall within the Ivanpah Valley is highly variable, but mean annual precipitation is approximately 4 to 7 inches. The distribution of rainfall is also bi-modal with winter peak precipitation typically in February and summer peak rain falls in August. Runoff from the steep surrounding mountains is rapid and flash floods are common events as most of the storm water in the Ivanpah Valley drains across the alluvial fan to Ivanpah and Roach Dry Lakes. Although the Mojave Desert is the driest of the North American deserts, the

east Mojave does receive a large percentage of its annual precipitation from summer "monsoon" rains. As reported in Hereford and others (2001) the relative abundance of cacti, many yuccas, agaves, and agave-like plants tend to be greater where warm-season rainfall is abundant. This is true of the Study Area where cacti are extremely abundant.

The Study Area contains two major vegetation communities: Creosote Bush-White Bursage and Mixed Saltbrush (Figure 3.17-1). These native vegetation communities are largely intact and relatively free from noxious and invasive weeds. Native vegetation and natural topography provides habitat to a variety of wildlife species. Vegetation within the Creosote Bush-White Bursage Series is more diverse within the rocky terrain of the stabilized alluvial fan found at higher elevations (generally above 2,500 feet) within the northern- and southern-most extents of the Project Study Area. Mixed Saltbush Series is found along the eastern portion of the Study Area. This community is situated within a relatively narrow band that begins at the edge of the non-vegetated Ivanpah Dry Lake and extends to the west approximately 800 feet (First Solar *2013e*). Soils within the Study Area consist primarily of sand and gravel within a broad alluvial fan originating in the Clark Mountain Range. Slopes within the site range from approximately 0 to 5 percent with an eastern aspect.

The native habitat within the project area provides host plants for numerous insect and invertebrate species. Spiders, scorpions, beetles, crickets, flies, butterflies, and bees exist in the area and provide a food base for other species. Nine uncommon species potentially could occur at the project site, including the Mojave Desert blister beetle (*Lytta insperata*, Federal species of concern), brown tassel trigonoscuta weevil (*Trigonoscuta brunnotesselata*), desert green hairstreak butterfly (*Callophrys comstocki*), monarch butterfly (*Danaus plexippus*), Mojave dotted blue butterfly (*Euphilotes mojave*), San Emigdio blue butterfly (*Plebulina emigdionis*), cuckoo wasp (*Ceratochrysis grisselli*), and two bee species (*Habropoda pallida* and *Neolarra alba*). No special status insect or invertebrate species with regulatory protection are known to occur within the project area.

Reptiles that utilize these types of habitats include desert tortoise, western whiptail (*Cnemidophorus tigris*), side-blotched lizard (*Uta stansburiana*), desert iguana (*Dipsosaurus dorsalis*), long-nosed leopard lizard (Gambelia wislizenii), western whiptail (*Cnemidophorus tigris*), zebra-tailed lizard (*Callisaurus draconoides*), and desert horned lizard (*Phrynosoma platyrhinos*) (First Solar *2013e*).

The Project Study Area provides forage, cover, roosting, and nesting habitat for a variety of bird species. Non-game birds include a variety of migratory songbirds and raptors, many of which are protected by the Migratory Bird Treaty Act (MBTA) and are included on the USFWS Birds of Conservation Concern (BCC) list. Resident and migratory birds occur at the site during the winter, migratory, and breeding seasons, including species such as black-throated sparrow (*Amphispiza bilineata*), horned lark (*Eremophila alpestris*), common raven (*Corvus corax*), Brewer's sparrow (*Spizella breweri*), white-crowned sparrow (*Zonotrichia leucophrys*), house finch (*Carpodacus mexicanus*), and ash-throated flycatcher (*Myiarchus cinerascens*) (First Solar *2013e*).

The diverse landscape features, soil types, vegetation, and prey availability at the Project Study Area likely support a variety of mammal species such as various species of pocket mice, desert woodrat (*Neotoma lepida*), Audubon's cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus*), whitetail antelope squirrel (*Ammospermophilus leucurus*), desert kit fox (*Vulpes macrotis*), and coyote (*Canis latrans*). Given the proximity of the Clark Mountains, it is likely that mule deer (*Odocoileus hemionus hemionus*) and desert bighorn sheep (*Ovis canadensis nelsoni*) may use the upper elevations of the valley as movement corridors and foraging habitat. No fish or amphibian species are likely to inhabit the Project Study Area or immediately surrounding areas because of the absence of suitable aquatic habitat (First Solar *2013e*).

Special Status Wildlife Species

For assessment purposes in this *EIS/EIR*, a special status species *is considered to be* a wildlife species that meets the following criteria:

- Designated as either rare, threatened, or endangered by CDFW or the USFWS, and are protected under either the California or Federal Endangered Species Acts;
- Candidate species being considered or proposed for listing under these same Acts;
- Species of special consideration as referenced in the NEMO Plan and Final EIS (BLM 2002) and Biological Opinion for the NEMO Plan (USFWS 2002);
- State Species of Special Concern as designated by CDFW; or
- Considered endangered, threatened, or rare pursuant to CEQA Guidelines, Section 15380.

Special status species were evaluated for their potential to occur within the Study Area and included special status species for which focused surveys were conducted, sightings recorded during general or other species-specific wildlife surveys, and those species of particular concern as noted by discussions with resource agencies and during public scoping. Those species that were considered to have a low potential for occurrence and were not observed during surveys were eliminated from further analysis (Table 3.22-1). There are *16* special status wildlife species that are present and have moderate to high potential for occurrence. The subsequent section describes relevant natural history and survey results for these species. For a detailed description of survey methods that were used, please refer to the *Biological Resources Technical Report – Stateline Solar Farm Project* (First Solar *2013e*).

Table 3.22-1. Potential for Occurrence of Special Status Species Within the Study Area

Scientific Name	Common Name	Status	Source	Occurrence within Study Area
BIRDS				
Accipiter cooperi	Cooper's hawk	CDFW: WL IUCN: LC	NEMO	**Not observed – Low Potential** Nesting habitat of woodlands, riparian woodlands or desert oais not present on-site. Considered winter visitor or migrant, not likely resident
Aquila chrysaetos	golden eagle	BLM: Sensitive CDFW: Fully Protected, WL IUCN: LC	NEMO	**Present – High Potential** Nesting habitat absent within Project alternatives, but nests and seven active territories are located within 10 mile buffer. Umberci Mine territory overlaps Study Area. Residents are present (foraging) year-round (First Solar *2013e*)
Athene cunicularia	burrowing owl	BLM: Sensitive CDFW: SSC IUCN: LC USFWS:BCC	NEMO	**Present – High Potential** Two burrows with sign observed within Alternative 1, 3, and 4 footprints. Six burrows with sign observed in Alternative 2 footprint. Likely resident and may be present in low numbers year-round.
Buteo regalis	ferruginous hawk	FWS: FSC, MNBMC CDFW: WL IUCN: LC USFWS:BCC	NEMO	**Not observed – Low Potential** Nesting habitat absent. May forage on desert steppe habitats, as well as other open habitats. Considered infrequent winter visitor or migrant. Not likely resident.
Buteo swainsoni	Swainson's hawk	CDFW: Threatened IUCN: LC USFWS:BCC	NEMO	**Present – Low Potential** Two individuals observed in migration one mile north of Study Area in 2011. Nesting habitat absent. Migrant, not likely resident.
Chaetura vauxi	Vaux's swift	CDFW: SSC IUCN: LC	CDFW	**Not observed – Low Potential** Nesting habitat limited. Infrequent observations associated with migration. Not likely resident.
Charadrius alexandrinus nivosus	western snowy plover	ESA: Threatened CDFW: SSC USFWS:BCC	NEMO	**Not observed – Low Potential** Nest in playas and other wetland areas; nesting habitat absent. May be a rare migrant to Ivanpah Dry Lake during winter months. Not likely resident.
Circus cyaneus	northern harrier	CDFW: SSC IUCN: LC	NEMO	**Present – High Potential** One individual observed outside Primary Study Area. Nesting habitat limited. Observations likely migrants and overwintering residents.
Falco mexicanus	prairie falcon	CDFW: WL IUCN: LC USFWS:BCC	NEMO	**Present – High Potential** Four individuals observed during aerial eagle surveys. One individual observed during avian point counts. While nesting habitat absent from Primary Study Area, species may be present (foraging) year-round. Three nests observed within 10 mile buffer.
Falco peregrinus anatum	peregrine falcon	ESA: Delisted CESA: Delisted CDFW: FP USFWS:BCC	CDFW	**Present – Low Potential** Four individuals observed during aerial survey and avian point counts, with the closest observation six miles from Study area. Nesting habitat absent from vicinity of Study Area. Not likely resident due to absence of large waterbody needed to support prey base.
Lanius ludovicianus	loggerhead shrike	CDFW: SSC IUCN: NT USFWS:BCC	NEMO	**Present – High Potential** Three individuals observed within Primary Study Area. Nesting habitat present. Likely resident.

Table 3.22-1. Potential for Occurrence of Special Status Species Within the Study Area

Scientific Name	Common Name	Status	Source	Occurrence within Study Area
BIRDS				
Pyrocephalus rubinus	vermilion flycatcher	CDFW: SSC IUCN: LC	NEMO, USGS	**Not observed - Low Potential** Nesting habitat absent in Study Area, may use trees associated with Primm Lake Golf Course. May be infrequent forager, but more often associated with surface water, riparian woodlands, and open savanna and agricultural areas. Not likely resident within Study Area.
Toxostoma bendirei	Bendire's thrasher	BLM: Sensitive CDFW: SSC IUCN: VU USFWS:BCC	NEMO	**Not observed - Moderate Potential** Nesting habitat present. Infrequent observations in high quality habitat in the area.
Toxostoma crissale	Crissal thrasher	CDFW: SSC IUCN: LC USFWS:BCC	NEMO, USGS	**Not observed - High Potential** Nesting habitat present. Observed in area as year-round resident in 2007/2008.
Toxostoma lecontei	Le Conte's thrasher	BLM: Sensitive CDFW: SSC IUCN: LC USFWS:BCC	NEMO, USGS	**Present – High Potential** Four individuals observed within Primary Study Area. Nesting habitat present. Likely Resident.
REPTILES				
Gopherus agassizii	desert tortoise	CDFW: Threatened USFWS: Threatened IUCN: VU	NEMO, BLM, USFWS	**Present – High Potential** Observed within Study Area. Study Area is located within BLM Category I desert tortoise habitat. Likely resident. Point estimates of 40 (Alt. 1), 50 (Alt. 2), 42 (Alt. 3), and 32 (Alt. 4).
Heloderma suspectum cinctum	banded Gila monster	BLM: Sensitive CDFW: SSC IUCN: NT	NEMO, BLM	**Not observed – Moderate Potential** May occur in Clark Mountain and Metamorphic Hill west of the Study Area. Moderate potential in Alt. 1 near Metamorphic Hill, low potential in other alternative locations.
MAMMALS				
Ovis canadensis nelsoni	Nelson's bighorn sheep	BLM: Sensitive	NEMO, BLM, CDFW	**Not observed – Low Potential** Observed within ten-mile buffer in Clark Mountains. Not observed within Primary Study Area. Clark Mountain herd was estimated in 1988 to have 150 sheep. Bighorn may utilize northern extent of Study Area during migration.
Taxidea taxus	American badger	CDFW: SSC IUCN: LC	CDFW	**Present – High Potential** Documented near site in 2007.
Vulpes macrotis arsipus	*Desert kit fox*	*CDFW: Fur-Bearing Mammal*	*CDFW*	***Present – High Potential*** *Burrows and sign identified during surveys*.
BATS				
Eumops perotis	Western mastiff bat	USFWS: FSOC CDFW: SSC	CDFW; Brown 2011	**Not observed – Low Potential** Not documented during the 2010/2011 bat surveys for the project area. Suitable foraging habitat is present within and adjacent to the study area, but habitat within the project area provides limited opportunities for roosting. The rocky hills immediately adjacent to the Study Area (e.g., Stateline Hills, Metamorphic Hills, and Clark Mountains) provide ample crevice roosting habitat.

Table 3.22-1. Potential for Occurrence of Special Status Species Within the Study Area

Scientific Name	Common Name	Status	Source	Occurrence within Study Area
BATS				
Antrozous pallidus	Pallid bat	CDFW: SSC	Brown 2011	**Present – High Potential** Documented during the 2010/2011 bat surveys for the project area. Suitable habitat is present within and adjacent to the study area.
Corynorhinus townsendii	Townsend's big-eared	USFWS: FSOC CDFW: SSC	Brown 2011	**Present – High Potential** A maternity colony and hibernation site was documented during the 2010/2011 bat surveys for the project area within Umberci Mine, approximately two miles north of the study area. This species could also forage over the project area.
Euderma maculatum	Spotted bat	USFWS: FSOC CDFW: SSC	Brown 2011	**Not observed – Low Potential** Not documented during the 2010/2011 bat surveys for the project area. Suitable foraging habitat is present within and adjacent to the study area, but habitat within the project area provides limited opportunities for roosting. The rocky hills immediately adjacent to the Study Area (e.g., Stateline Hills, Metamorphic Hills, and Clark Mountains) provide ample crevice roosting habitat.
Lasiurus blossevillii	Red bat	CDFW: SSC	Brown 2011	**Not observed – Low Potential** Not documented during the 2010/2011 bat surveys for the project area. Suitable foraging habitat is present within and adjacent to the study area, but habitat within the project area provides limited opportunities for roosting. The rocky hills immediately adjacent to the Study Area (e.g., Stateline Hills, Metamorphic Hills, and Clark Mountains) provide ample crevice roosting habitat.
Myotis ciliolabrum	Small-footed myotis	USFWS: FSOC	Brown 2011	**Present – High Potential** Documented during the 2010/2011 bat surveys for the project area. Suitable habitat is present within and adjacent to the study area.
Myotis evotis	Long-eared myotis	USFWS: FSOC	Brown 2011	**Not observed – Low Potential** Not documented during the 2010/2011 bat surveys for the project area. Suitable foraging habitat is present within and adjacent to the study area, but habitat within the project area provides limited opportunities for roosting. The rocky hills immediately adjacent to the Study Area (e.g., Stateline Hills, Metamorphic Hills, and Clark Mountains) provide ample crevice roosting habitat.
Myotis thysanodes	Fringed myotis	USFWS: FSOC	Brown 2011	**Not observed – Low Potential** Not documented during the 2010/2011 bat surveys for the project area. Suitable foraging habitat is present within and adjacent to the study area, but habitat within the project area provides limited opportunities for roosting. The rocky hills immediately adjacent to the Study Area (e.g., Stateline Hills, Metamorphic Hills, and Clark Mountains) provide ample crevice roosting habitat.

Table 3.22-1. Potential for Occurrence of Special Status Species Within the Study Area				
Scientific Name	**Common Name**	**Status**	**Source**	**Occurrence within Study Area**
BATS				
Myotis volans	Long-legged myotis	USFWS: FSOC	Brown 2011	**Not observed – Low Potential** Not documented during the 2010/2011 bat surveys for the project area. Suitable foraging habitat is present within and adjacent to the study area, but habitat within the project area provides limited opportunities for roosting. The rocky hills immediately adjacent to the Study Area (e.g., Stateline Hills, Metamorphic Hills, and Clark Mountains) provide ample crevice roosting habitat.
Myotis yumanensis	Yuma myotis	USFWS: FSOC	Brown 2011	**Present – Low Potential** Documented during the 2010/2011 bat surveys for the project area near the Primm Valley Golf Course. This species is typically found near open water and feeds on emerging aquatic insects. Based on the absence of such habitat within the primary study area, this species was most likely in the vicinity as a result of the lakes at the Primm Valley Golf Course.

CDFW - California Department of Fish and Wildlife
SSC - California Species of Special Concern
WL – Watch List

IUCN - The World Conservation Union
LC – Least Concern
NT – Near Threatened
VU – Vulnerable
FP = Fully protected

USFWS – U.S. Fish and Wildlife Service
BCC - Birds of Conservation Concern
FSOC - Former Candidate (Category 2) for listing under U.S. Endangered Species Act; Species of Concern

Potential – limited or no breeding habitat; incidental or migrant observations
Moderate Potential – suitable habitat present; infrequent observations
High Potential – suitable habitat present and breeding habitat; observations common

Reptiles

Desert Tortoise (Gopherus agassizii)

Natural History

The desert tortoise's range includes the Mojave Desert region of Nevada, southern California, and the southwest corner of Utah and the Sonoran Desert region of Arizona and northern Mexico. The desert tortoise range is divided into Mojave and Sonoran populations. The Ivanpah Valley supports a portion of the Mojave population, primarily inhabiting creosote bush-dominated valleys with adequate annual forbs for forage.

Desert tortoises have been known to live up to 70 years, but the typical adult likely lives 25 to 35 years (USFWS 1994). Like many long-lived species, the tortoise has a relatively slow rate of reproduction, and achieves breeding status at 15 to 20 years of age. Egg-laying occurs primarily from April to July (Rostral and others 1994; USFWS 1994); the female typically lays 2 to 14 eggs (average 5 to 6) eggs in an earthen chamber excavated near the mouth of a burrow or under a bush (Woodbury and Hardy 1940; USFWS 1994). The eggs typically hatch 90 to 120 days later, between August and October.

Desert tortoise activity is seasonally variable, and in California peak adult and juvenile activity typically coincides with the greatest annual forage availability during the early spring and summer. However, tortoises will emerge from their burrows at any time of year when the weather is suitable. Hatchling desert tortoises typically become active earlier than adults do and their greatest activity period can be expected between late winter and spring. During active periods, tortoises feed on a wide variety of herbaceous plants, including cactus, grasses, and annual flowers (USFWS 1994).

Annual home ranges have been estimated between 10 and 450 acres and are age, sex, seasonal, and resource density dependent (USFWS 1994). Although adult males can be aggressive toward each other during the breeding season, there can be a great deal of overlap in individual home ranges (USFWS 1994). More than 1.5 square miles of habitat may be required to meet the life history needs of a tortoise and individuals have been known to travel more than 7 miles at a time (BLM 2002). In drought years, tortoises can be expected to wander farther in search of forage. During their active period, desert tortoises retreat to shallow burrows and aboveground shade to escape the heat of the day, and will also retire to burrows at nighttime. Desert tortoises are primarily dormant in winter in underground burrows and sometimes congregate in communal dens.

Desert tortoise populations have declined throughout their range because of loss and degradation of habitat caused by urbanization, agricultural development, military training, recreational use, mining, and livestock grazing. The loss of individual desert tortoises to increased predation by common ravens, collection by humans for pets or consumption, collisions with vehicles on paved and unpaved roads, and mortality resulting from diseases also contributed to declines.

Survey Results

Full coverage protocol desert tortoise surveys were conducted from 2008 to 2012, following appropriate USFWS protocols for full coverage surveys (First Solar *2013e*). The revised protocols also provided methods to estimate the abundance of tortoises occurring within the Study Area. Table 3.22-2 provides a summary of the surveys that have occurred within the Project Study Area, as well as potential tortoise translocation sites.

Table 3.22-2 Summary of Desert Tortoise Surveys

Dates	Area (acres)	Description
18 – 27 April 2008	5,440	Majority of Solar Farm Study Area
19 – 24 October 2008	635	Section 35 in the southern Study Area
19 – 22 October 2009	170	Gen-Tie Line (7,000 linear feet of 1,000-foot wide study corridor)
29 March – 22 May 2011	1,120	Extended Study Area to the east and south
7 April – 7 May 2011	3,830	Primary Recipient Site
7 – 11 October 2011	800	Stateline Pass Connectivity
2 – 25 April 2012	9,000	Alternative Recipient Sites and Stateline Pass
5 – 14 May 2012	4,000	Solar Farm Project Alternatives (updated survey)

Category 1 habitat was designated in this are prior to passage of NEMO (BLM 2002). NEMO resulted in a redesignation of Category 1 to the boundaries of the critical habitat, and the remaining areas, including this site, are now Category *3*.

In surveys prior to 2012, sign of desert tortoise (i.e., live tortoises, active burrows/pallets, and recent scat, and tracks) were found throughout the Study Area (*see Figure 12 in* First Solar *2013e*). Thirty-three live tortoises [twenty-eight adults (>160 millimeters) and five immature (<160 millimeters)] and 234 good-to-excellent burrows/pallets were observed within the Study Area during these pre-2012 surveys. In addition, 159 other inactive burrows/pallets ranging in quality from poor-to-fair were recorded. Live tortoise observations were not evenly distributed throughout the Study Area. One group was located in the northeast quadrant of Section 22 and southeast quadrant of Section 15, and another group was located in the southeastern quadrant of Section 22. The remaining tortoise observations were more broadly distributed, but generally occurred at higher elevations within the study area that supported a stabilized alluvial fan consisting of rocky, gravelly soils (First Solar *2013e*). No tortoises or active burrows were found within 1,700 meters of the western edge of the lakebed. Furthermore, no tortoises were observed in the northern limits of the Study Area. Over 100 carcasses were detected during the surveys; most of which (74 percent) were estimated to be greater than 4 years since death. The location and distribution of carcasses were plotted with inactive, older desert tortoise burrows to characterize historic use areas (*see Figure 13 in* First Solar *2013e*).

The Project Study Area (approximately 5,850 acres) is estimated to support 69 adult desert tortoises, with a 95 percent confidence interval ranging between 27 and 180 adult desert tortoises. Within the Study Area, the overall tortoise density is estimated to be 7.2 tortoises per square mile, with a 95 percent confidence interval ranging between 2.8 to 18.9 adult desert tortoises per square mile.

Additional surveys were conducted in the spring of 2012. The result from those surveys are shown in Table 3.22-3.

Table 3.22-3 Desert Tortoise Estimates from Spring 2012 Surveys[1]

	Alternative 1	*Alternative 2*	*Alternative 3*	*Alternative 4*
Live Tortoises Observed	16	*25*	*14*	*18*
Estimated Number of Tortoises	40	*62*	*35*	*45*
Lower 95% Confidence Interval	15	*24*	*14*	*17*
Upper 95% Confidence Interval	107	*160*	*94*	*118*

[1] Includes only adult tortoises >160millimeter mean carapace length (MCL); estimates rounded to nearest whole number
[2] Unknown age classes were treated as adult tortoises, which may result in higher estimates

The 2012 surveys also included surveys of four potential recipient sites for translocated tortoises. The Translocation Plan (First Solar *2013d*) identifies four potential recipient sites, and evaluated them based on the criteria described above. These sites, and a summary of their relevant characteristics, are as follows:

- The Perimeter Recipient Site comprises *3,800* acres located to the north, west, and south of the Proposed Action area, but excluding Metamorphic Hill. This area currently has a density of *9* adult tortoises per square mile, so could ultimately support the addition of *45* tortoises. This area is already designated to ultimately be the recipient site for 10 tortoises from Ivanpah SEGS, but could potentially support an additional 35 tortoises from Stateline. Due to its proximity to the proposed facility, this area could be used to support both in-home-range and outside-of-home-range translocation. Because the area is the location of other rights-of-way and the highway, tortoise exclusion fencing would be needed to protect the area.
- The Stateline North Recipient Site comprises *2,290* acres extending west of Primm towards Stateline Pass. This site is located approximately 1 mile from the Proposed Action area. The current tortoise density is *9* adults per square mile, so this site could support up to 30 tortoises for out-of-home-range translocation. The habitat in this area differs from that of the Proposed Action area, consisting of rockier terrain, caliche, and incised washes.
- The Mesquite Recipient Site is located approximately 6 miles from the Proposed Action area in Mesquite Valley. The site covers 2,580 ac. The current tortoise density is 23 adults per square mile, but the Plan notes that these are not uniformly distributed, and lower density areas exist that could support translocation. At this time, tortoise connectivity through Stateline Pass is assumed (NatureServe 2012), but would need to be definitely established through additional surveys.
- The East Lake Recipient Site comprises *1,300* acres located 3 miles from the project on the east side of Ivanpah Dry Lake. This area has a density of *7* adult tortoises per square mile. This site *is adjacent to* the Union Pacific Railway, so any translocation in the area would need be done in cooperation with the railroad in order to implement appropriate tortoise fencing and to improve culverts.

In addition to potential recipient sites, the Plan proposes a Control Site which comprises *2,000* ac on the east side of Ivanpah Dry Lake. This area would partially overlap with the control site being used by Ivanpah SEGS, but these two uses would not conflict with each other.

Critical Habitat Designation and Desert Tortoise Recovery Plan

The USFWS desert tortoise recovery plan is the principal strategy for recovery and delisting of this species (USFWS 2011a). As part of the recovery strategy, the USFWS designated critical habitat for the desert tortoise in portions of California, Nevada, Arizona, and Utah (USFWS 1994). Critical habitat is a term defined by the federal Endangered Species Act referring to areas designated by the USFWS that are essential for the conservation of threatened or endangered species and may require special management and protection (USFWS 2002). The proposed project is not within designated critical habitat for any species, but is located approximately 3.5 miles northwest of the Ivanpah Critical Habitat Unit for desert tortoise *(Figure 3.22-1)*.

The 1994 recovery plan (USFWS 1994) identified six subpopulations, or “Recovery Units” based on genetics, morphology, behavioral patterns, and ecosystem types. The 2011 recovery plan reduced the number of recovery units from six to five and adjusted the boundaries (USFWS 2011a). Within each Recovery Unit, DWMAs were developed to provide “reserve level” protection for the tortoise by protecting genetic factors, minimum population sizes, and sufficient

size of the reserve areas (USFWS 1994). Pursuant to the 1994 recovery plan, DWMAs have been formalized through federal land use planning processes, particularly on BLM lands, and are administered and designated as ACECs (USFWS 2011a). These ACECs define specific management areas based on the general recommendations for DWMAs in the 1994 Recovery Plan (USFWS 2011a). As part of the actions needed to accomplish the recovery of this species, land management goals within all DWMAs include restriction of human activities that adversely affect desert tortoises (USFWS 1994). Within the DWMAs, critical habitat was designated to identify areas containing key biological and physical attributes that are essential to the desert tortoise's survival and conservation, such as space, food, water, nutrition, cover, shelter, and reproductive sites.

The 1994 and 2011 Desert Tortoise Recovery Plans (USFWS 1994; USFWS 2011a) emphasize aggressive management within "tortoise conservation areas" a term that encompasses critical habitat, DWMAs, ACECs, and other conservation areas or easements managed for desert tortoises. While the recovery plans suggest that land managers focus the most aggressive recovery efforts toward tortoise conservation areas, they also emphasize that land managers should strive to limit the loss of desert tortoise habitat outside conservation areas as much as possible (USFWS 2011a). The recovery plans recognize that activities occurring on lands beyond the boundaries of existing tortoise conservation areas can affect tortoise populations as well as the effectiveness of conservation actions occurring within the conservation area boundaries. While recovery efforts may be prioritized within existing desert tortoise conservation areas, populations, habitats, and actions outside of these areas may also contribute to, or hamper, recovery of the species.

Banded Gila Monster (Heloderma suspectum cinctum)

Natural History

The banded Gila monster is considered rare in California (Lovich and Beaman 2007) with only 26 credible records of the species documented in California within the past 153 years. This large and distinctive looking lizard is difficult to observe even in areas where they have been recently recorded. As a result, little is known about this species' distribution, population status, and life history in California.

Most of the historical observations in California occurred in mountainous areas of moderate elevations with rocky, incised topography, in large and relatively high ranges as well as riparian areas (Lovich and Beaman 2007). Despite the widespread localities of potential habitat throughout the California desert, the few documented observations suggest the California populations appear to be confined to the eastern portion of the California desert (Lovich and Beaman 2007), and the current distribution is apparently a function of summer rainfall. As reported by Lovich and Beaman (2007), all California Gila monster observations occurred east of the 116° longitude in areas that received at least 25 percent of their annual precipitation during the summer months. Throughout their range, Gila monsters appear to be most active during or following summer rain events. Gila monsters have been recorded in the adjacent Mojave National Preserve and the Clark Mountains (Lovich and Beaman 2007). The closest confirmed observation of a Gila monster to the project area was collected within the Mojave National Preserve in 1962 on the eastern slope of the Clark Mountains near Ivanpah Springs (Persons and Nowak 2007). Another incidental observation from the area includes finding Gila monster remains beneath a redtail hawk nest near Primm, Nevada (CH2M Hill 2008).

Although the project area does not receive near the amount of summer rainfall as the Sonoran Desert where Gila monsters are more prevalent, the Ivanpah Valley does mimic the climatic conditions that appear to be favorable to Gila monster presence (CH2M Hill 2008).

Survey Results

No Gila monsters were observed during field surveys (First Solar *2013e*). But, given the habitat, Gila monsters potentially could occur in the Project area. Suitable habitat is located in the rocky foothills surrounding the Study Area, including Metamorphic Hill (First Solar *2013e*).

Birds

Golden Eagle (Aquila chrysaetos)

Natural History

Throughout most of the western United States golden eagles are mostly year-round residents, breeding from late January through August with peak activity in March through July (Kochert and others 2002). Migratory patterns are usually fairly local in California where adults are relatively sedentary, but dispersing juveniles sometimes migrate south in the fall.

Habitats for this species typically include rolling foothills, mountain areas, and deserts. Golden eagles need open terrain for hunting and prefer grasslands, deserts, savanna, and early successional stages of forest and shrub habitats. Golden eagles primarily prey on lagomorphs and rodents but will also take other mammals, birds, reptiles, and some carrion (Kochert and others 2002). This species prefers to nest in rugged, open habitats with canyons and escarpments, with overhanging ledges and cliffs and large trees used as cover.

Survey Results

In 2010, golden eagles were observed in the vicinity of the project on three occasions: Clark Mountain west (n=1) and Umberci Mine (n=2). Numerous nests were identified within an estimated 12 territories. Of these territories, seven were potentially active (WRI 2010). Many of the nests were likely alternative nest sites for the same territory. None of the territories were found to be engaged or successful in producing young for the 2010 breeding season. The lack of successful breeding may be attributed to natural annual variation and drought conditions (First Solar *2013e*).

Based on a territory radius of 5-miles, one territory located near the Umberci Mine, and containing two potential nest sites, was estimated to partially overlap the Project site. Further ground-based surveys in 2011 found one active, reproductive nest within the southwestern nest site near the Umberci Mine, located approximately two miles northwest of the proposed Project site.

Other potential nest sites located within the Keany Pass region (approximately five miles west of the Study Area) were occupied in 2011 by red-tailed hawks, not by golden eagles.

The spring 2011 golden eagle point count surveys revealed a pair of golden eagles. The pair was observed exhibiting breeding aerial displays. An adult golden eagle was observed perched on and foraging in the vicinity of Metamorphic Hill on several occasions during the winter/spring of 2011 (Mohlmann 2011). No golden eagles were observed during the summer 2011 golden eagle point count surveys, including the previously active Umberci Mine nest. The lack of observations during late summer may be a result of annual movement into higher elevations of the neighboring mountain ranges.

Burrowing Owl (Athene cunicularia)

Natural History

Western burrowing owls inhabit arid lands throughout much of the western United States and southern interior of western Canada (Haug and others 1993). In the Mojave Desert region, and in many other areas, this species has declined because of habitat modification, poisoning of its prey, and introduced nest predators. The burrowing owl is diurnal and usually non-migratory in this portion of its range.

Burrowing owls are unique among the North American owls in that they nest and roost in abandoned burrows, especially those created by California ground squirrels, San Joaquin kit fox, desert tortoise, and other wildlife. Burrowing owls have a strong affinity for previously occupied nesting and wintering habitats. They often return to burrows used in previous years, especially if they were successful at reproducing there in previous years (Gervais and others 2008). The southern California breeding season (defined as from pair bonding to fledging) generally occurs from February to August with peak breeding activity from April through July (Haug and others 1993).

In the Mojave Desert, burrowing owls generally occur at low densities in scattered populations, but they can be found in much higher densities near agricultural lands where rodent and insect prey tend to be more abundant (Gervais and others 2008). Burrowing owls tend to be opportunistic feeders. Large arthropods, mainly beetles and grasshoppers, comprise a large portion of their diet. Small mammals, especially mice and voles (*Microtus*, *Peromyscus*, and *Mus* spp.), also are important food items. Other prey animals include reptiles and amphibians, young cottontail rabbits, bats, and birds, such as sparrows and horned larks. Consumption of insects increases during the breeding season (Haug and others 1993).

Survey Results

Burrowing owls were observed in the vicinity during surveys in 2008, but not in 2007 (BLM 2010), 2010, or 2011 (BLM 2010; First Solar *2013e*). Suitable habitat for burrowing owls exists throughout the Study Area. The Study Area supports numerous suitable burrows, mainly old tortoise burrows. For this analysis, burrowing owls are considered present within the Study Area, but in low numbers. Phase 3 surveys are recommended prior to ground disturbing activities to determine the number of resident owls potentially affected by construction.

Northern Harrier (Circus cyaneus)

Natural History

Northern harrier nesting habitat consists of open wetlands, wet, lightly grazed pastures, fallow fields, dry uplands, prairies, agricultural lands, and cold desert shrub-steppe of Utah and Idaho (MacWhirter and Bildstein 1996). Consequently, nesting habitat is considered extremely limited or absent in the Study Area.

Northern harrier is a widespread migrant and winter visitor through California (Garrett and Dunn 1981). Fall migrants may be noted as early as late August, and this species is numerous away from breeding areas by late September; wintering birds may be present through March and often until mid-April (Garrett and Dunn 1981). Grinnell and Miller (1944) cite breeding localities over much of the state, including the interior regions of western Riverside and San Bernardino Counties.

Compared to nesting habitat, migrants and wintering birds are somewhat broader in the habitats they occupy, using both wetland habitats and a variety of upland habitats with low vegetation. Wintering birds in the desert regions occur mainly in agricultural areas (Garrett and Dunn 1981),

especially those dominated by alfalfa fields; they also occupy extensive marshes such as at Piute Ponds and Harper Dry Lake. Migrants in the deserts are widespread in open habitats, including marshes, grasslands, pastures, agricultural fields, saltbush scrub, and even creosote scrub.

Survey Results

While species specific surveys were not conducted, one individual northern harrier was observed outside the Primary Study Area (First Solar *2013e*). Within the study area nesting habitat is extremely limited or absent. Horthen harrier may use the site vicinity for overwintering.

Prairie Falcon (Falco mexicanus)

Natural History

This large falcon typically builds nest sites on cliffs, similar to the golden eagle. In the desert they are found in most vegetation types, although sparse vegetation provides the best foraging habitat. In the Mojave, mean home range size has been found to be approximately 50 to 70 square kilometers (Harmata and others 1978).

Survey Results

Prairie falcons have been repeatedly observed in the Study Area. A single prairie falcon was observed in flight over the northern portion of the Study Area in spring 2008. Four individual prairie falcons and three cavity nests, which were attributed to prairie falcons, were observed in 2010. Prairie falcons have also been found in the project vicinity. Individuals were located in the vicinity of Clark Mountains, Stateline Hills, and Lucy Gray Mountains. The nests were located approximately two miles north (near Umberci Mine), six miles west, and nine miles southwest of the Study Area, all within the Clark Mountain range. Nesting habitat for this species does not occur within the Study Area. The nearest possible nesting habitat is within the northern region of the Clark Mountain range located approximately two miles northwest of the Study Area (First Solar *2013e*).

Loggerhead Shrike (Lanius ludovicianus)

Natural History

Loggerhead shrikes are uncommon residents throughout most of the southern portion of their range, including southern California. In southern California they are generally much more common in interior desert regions than along the coast (Humple 2008). In the Mojave Desert this species appears to be most numerous in flat or gently sloping deserts and desert/scrub edges, especially along the eastern slopes of mountainous areas (Humpel 2008). Loggerhead shrikes initiate their breeding season in February and may continue with raising a second brood as late as July; they often re-nest if their first nest fails or to raise a second brood (Yosef 1996).

Habitat requirements include shrublands or open woodlands with both grass cover and areas of bare ground, and tall shrubs or trees for perching and nesting. This species can be found within lowland, open habitat types, including creosote scrub and other desert habitats, sage scrub, non-native grasslands, chaparral, riparian, croplands, and areas characterized by open scattered trees and shrubs. Fences, posts, or other potential perches are typically present. In general, loggerhead shrikes prey upon large insects, small birds, amphibians, reptiles, and small rodents over open ground within areas of short vegetation, usually impaling prey on thorns, wire barbs, or sharp twigs to cache for later feeding (Yosef 1996).

Survey Results

Loggerhead shrikes were detected in 2007 and 2008 within the Study Area (BLM 2010) and are year-round residents, using the site for nesting, foraging, and cover. During 2010 and 2011 surveys, three sightings of loggerhead shrikes were recorded, both along the existing transmission corridor in the northern extent of the Study Area (First Solar *2013e*). This species is considered to be present, with suitable nesting and foraging habitat located within the Study Area.

Bendire's thrasher (Toxostoma bendirei)

Natural History

Bendire's thrasher is an uncommon resident of desert succulent shrub and Joshua tree woodland habitats from San Bernardino County to western Kern County (Remsen 1978). Breeding season extends from late February to early August. The diet of Bendire's thrasher consists of terrestrial caterpillars, beetles, other insects, and other small invertebrates (Bent 1948). Cactus and spiny desert shrubs are typically used for cover, with nests commonly found in cholla, yucca, palo verde, or thorny shrubs and trees in flat desert areas.

Survey Results

The Bendire's thrasher was not found within the Study Area during 2007 and 2008 surveys (BLM 2010). While several sightings of Bendire's thrasher were observed in the mountainous region of the Mojave National Preserve, they were not observed during 2010 and 2011 surveys (First Solar *2013e*). Breeding habitat is highly variable, but does occur within the Mojave and Great Basin deserts within dense Mojave Desert scrub with Joshua trees, Spanish bayonet, Mojave yucca, cholla cactus, or other succulents.

While Bendire's thrasher may occupy high quality habitat within the project area, the lack of observations over four years of surveys suggests that they are absent or infrequent visitors.

Crissal Thrasher (Toxostoma crissale)

Natural History

Crissal thrashers are non-migratory residents ranging from southern Nevada and southeastern California to western Texas and central Mexico, and they are known to occur in the Mojave Desert in the vicinity of the Clark Mountains (Fitton 2008a). This species prefers habitats characterized by dense, low scrubby vegetation, such as desert and foothill scrub and riparian brush including higher elevation arroyos of the Mojave Desert, normally near the upper limit of desert scrub vegetation as it transitions into pinyon-juniper woodland. The nest of this species typically consists of an open cup of twigs, lined with finer vegetation, and placed in the middle of a dense shrub. Loss of habitat to clearing for agriculture or urban and suburban development threatens some populations.

Survey Results

No crissal thrashers were observed during field surveys (First Solar *2013e*), but nesting habitat is present within the Project area (First Solar *2013e*). During surveys for the Ivanpah SEGS project, crissal thrashers were detected during the surveys and were stated to be likely to be year-round residents at the Ivanpah site, using the site for nesting, foraging, and cover (BLM 2010).

Le Conte's Thrasher (Toxostoma lecontei)

Natural History

This species inhabits some of the hottest and driest habitats in the arid southwest, including the Mojave Desert where they occur year-round. Preferred habitats include sparse desert scrub, alkali desert scrub, and desert succulent scrub habitats with open desert washes. They seek gentle to rolling slopes bisected by dry desert washes, conditions found on alluvial fans that are found in the project area. The species is especially wary of humans and is susceptible to human disturbance (Remsen 1978). This species requires areas with an accumulated leaf litter under most plants as cover for its preferred arthropod prey; they also feed on seeds, insects, small lizards, and other small vertebrates (Sheppard 1970).

Survey Results

The Le Conte's thrasher population densities are among the lowest of passerine (perching) birds, estimated at less than five birds per square kilometer in optimal habitats (Fitton 2008b). LeConte's thrashers were detected during 2007, 2008, 2010 and 2011 surveys (BLM 2010; First Solar *2013e*). This species is considered to be present, with suitable nesting and foraging habitat located within the Study Area.

Mammals

Nelson's Bighorn Sheep (Ovis canadensis nelsoni)

Natural History

The Nelson's bighorn sheep habitat includes the Transverse Ranges through most of the desert mountain ranges of California and adjacent Nevada and northern Arizona to Utah. This species is widely distributed from the White Mountains in Mono County south to the Chocolate Mountains in Imperial County, and is known to occur in the Clark Mountains (CH2M Hill 2008). Essential habitat for bighorn sheep includes steep, rocky slopes of desert mountains, termed "escape terrain". Their agility on steep rocky terrain is an adaptation used to escape predators such as coyotes, eagles, and cougars (Wehausen 1992).

Bighorn sheep graze on grasses and browse shrubs, particularly in fall and winter, and seek minerals at natural salt licks. In the spring, when annual plants are available, bighorn tend to disperse downhill to bajadas and alluvial fans to forage. Bighorn sheep have a large rumen, relative to body size, which allows digestion of grasses, even in a dry state (Hanly 1982). This gives them flexibility to select diets that optimize nutrient content from available forage. Consequently, bighorn sheep feed on a large variety of plant species and diet composition varies seasonally and among locations. While diet quality in the Mojave Desert varies greatly among years, it is most predictably high in late winter and spring (Wehausen 1992), and this period coincides with the peak of lambing. Desert bighorn have a long lambing season that can begin in December and end in June in the Mojave Desert, and a small percentage of births commonly occur in summer as well (Wehausen 1992).

Radio telemetry studies of bighorn sheep in various southwestern deserts, including the Mojave Desert of California, have found considerable movement of these sheep between mountain ranges (Bleich and others 1990). Consequently, intermountain areas of the desert floor that bighorn traverse between mountain ranges can be as important to the long-term viability of populations as are the mountain ranges themselves (Schwartz and others 1986; Bleich and others 1990).

Surface water is another element of desert bighorn habitat considered essential to population health. Male and female bighorn sheep inhabiting desert ecosystems can survive without

consuming surface water (Krausman and others 1985), and males appear to drink infrequently in many situations; however, there are no known large populations of bighorn sheep in the desert region that lack access to surface water. It is common for males and females to segregate and occupy different habitats outside the breeding season (Bleich and others 1997). Females tend to choose particularly steep, safe areas for bearing and initial rearing of lambs. Areas of steep limestone are commonly preferred lambing areas if available (Jaeger 1994). Males frequently occupy much less precipitous habitat during the lamb-rearing season (Bleich and others 1997).

Survey Results

In 1988, the Clark Mountain bighorn sheep herd was estimated to consist of 150 sheep. During golden eagle surveys (First Solar *2013e*), 41 bighorn sheep were observed at various locations in proximity to the Study Area including at Devil's Peak, Devil's Canyon, Ivanpah Valley, and the Stateline Hills (WRI 2010). According to the NEMO plan, bighorn sheep regularly travel between different ranges, and some movement occurs between the Clark Mountains, Spring Mountains, and New York Mountains, including neighboring ranges in Nevada. Although Ivanpah Dry Lake supports a seasonal supply of water, it is not likely that sheep would utilize the lower basin area of the Ivanpah Valley near the lakebed, therefore crossing the Study Area. The northernmost section of the Study Area may be used infrequently by bighorn sheep during foraging and periods of movement between the Clark Mountains and Stateline Hills (First Solar *2013e*). Metamorphic Hill contains steep rocky terrain and may attract sheep lower into the Ivanpah Valley; however, this habitat is relatively isolated from other portions of the Clark Mountain range. A habitat evaluation tool was developed for the Desert National Wildlife Range in Nevada and includes an assessment of seven factors important to the use and presence of bighorn sheep (Monson and Sumner 1980). A review of the evaluation criteria indicates that the majority of the Study Area is not defined as important bighorn sheep habitat due to low to moderate scores in the seven assessment factors (First Solar *2013e*).

American Badger (Taxidea taxus)

Natural History

American badgers were once fairly widespread throughout open grassland habitats of California. They are now uncommon, permanent residents throughout most of the state, with the exception of the northern North Coast area. Known to occur in the Mojave Desert, they are most abundant in the drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Badgers are generally associated with treeless regions, prairies, parklands, and cold desert areas. Cultivated lands have been reported to provide little usable habitat for this species. They feed mainly on small mammals, especially ground squirrels, pocket gophers, rats, mice, and chipmunks. This species captures some of its prey above ground foraging on birds, eggs, reptiles, invertebrates, and carrion. Its diet will shift seasonally and yearly depending upon prey availability. This species is somewhat tolerant of human activities.

Badgers are generally solitary animals that are primarily active at night. They dig multiple burrows in friable soils within their home range, with the dens located up to 10 feet below the grounds surface. Their home range size depends on the sex, season, and geographic region, varying between 300 to 1,500 acres per animal. Badgers undergo torpor in winter months.

Survey Results

Although this species was not detected during focused surveys (First Solar *2013e*), the environmental conditions necessary to support this species exist within the Study Area,

Previous surveys (BLM 2010) observed this species approximately one mile west of the site in 2007. A badger was relocated from the Ivanpah solar site in 2011. Consequently, this species is considered to have a high potential to occur within the Study Area.

Desert Kit Fox (Vulpes macrotis arispus)

Natural History

Desert kit fox are an uncommon to rare permanent resident of arid regions of the southern portion of California. Kit fox occur in annual grasslands, or grassy open, arid stages of vegetation dominated by scattered herbaceous species. Kit fox occur in association with their prey base which is primarily cottontail rabbits, ground squirrels, kangaroo rats, and various species of insects, lizards, or birds (Zeiner and others 1990). Protection provided by kit fox dens for use as shelter, escape, cover, and reproduction is vital to the survival of the species. Title 14 CCR §460 identifies the desert kit fox as non-game species that may not be hunted or captured.

Survey Results

Desert kit fox burrows, complexes, and scat were observed throughout the Project Study Area, and the entire study area is considered habitat for this species. Surveys detected a total of 38 burrow/den complexes in the study area, mostly in the northern portion of the study area. Other sign, primarily scat, was common in both the northern and southern portions of the study area. Suitable prey (including mice, squirrels, and rabbits) and habitat to support this species occur throughout the project site.

Bat Species

Natural History

The project area provides limited opportunities for roosting. It is likely that several species frequent the project area in search of food. The rocky hills immediately adjacent to the Study Area (e.g., Stateline Hills, Metamorphic Hills, and Clark Mountains) and mines (the Umberci Mine) in the mountains adjacent to the project area provide ample roosting habitat for several bat species. Special status bat species known or that have moderate to high potential to be present within the project area include the pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Plecotus townsendii*), and small-footed myotis (*Myotis ciliolabrum*).

The pallid bat and small-footed myotis are locally common species of California. The pallid bat occurs throughout the state from Shasta to Kern counties except in the high Sierra. The small-footed myotis occurs from the west and east sides of the Sierra Nevada, and in Great Basin and desert habitats from Modoc to Kern and San Bernardino counties. Both species occupy a wide variety of habitats including grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests. The pallid bat is most common in open, dry habitats with rocky areas for roosting and is a yearlong resident in most of the range. Caves, rock crevices, tree bark, and mines are used as roost sites. The small-footed myotis may occupy similar habitat within and near the project area.

Townsend's big-eared bat is found throughout California in all but subalpine and alpine habitats, and may be found at any season throughout its range. Once considered common, Townsend's big-eared bat now is considered uncommon in California. It is most abundant in mesic habitats, and uses caves, mines, tunnels, buildings, or other human made structures for roosting. The Townsend's big-eared bat captures their prey in flight using echolocation, or by gleaning from foliage, with small moths being the principal food of this species. Extremely sensitive to disturbance of roosting sites, a single visit may result in the abandonment of a maternity roost.

Survey Results

A bat habitat assessment and surveys were performed by Patricia Brown, Ph.D. (Brown-Berry Biological Consulting) in 2010 and 2011 within the full Study Area (Brown 2011; First Solar *2013e*). Suitable habitat for several bat species (specifically those that are known to occur in the vicinity including pallid bats, western pipistrelles, and California leaf-nosed bats) was reviewed in the field. General areas that may serve as potential roosts and foraging sites were identified. Acoustic monitoring was conducted on July 28 and 29, 2010 and from May 14 to 16, 2011 to determine which bat species utilize the Study Area. Ultrasonic detectors (i.e., Anabat II and 1A) recorded echolocation signals overnight in thirteen locations in different areas of the Study Area to identify bat species and document general activity levels.

Roost surveys were conducted of rock shelters and mines in the mountains adjacent to the project area during the day and at night for evidence of bats and guano. The Umberci Mine (located approximately 1.5 miles northwest of the Study Area) was visited several times to census the species and numbers of bats present. Occupied mines were monitored at dusk by surveyors with night vision equipment to obtain accurate exit counts. The surveyors kept two counts for at least sixty minutes after the first bat exited of how many bats entered and exited the mines. Video cameras with auxiliary infrared lights were used to remotely monitor mines and to obtain permanent records of exiting bats.

Pallid bats and small-footed myotis were detected in a shallow rock cave in the foothills just north of the study area. A mine shaft was located near the active cave. This species has been found to roost in rock crevices during the day and congregate for socialization in boulder caves and mines during the night (Brown 2011). Echolocation signals were recorded early in the evening near the dry lakebed, which could suggest that pallid bats are roosting within small rock crevices on the ground and burrows throughout other portions of the study area (First Solar *2013e*).

The Umberci Mine, located in the Clark Mountain Range approximately two miles northwest of the study area, serves as a maternity colony and hibernation site for Townsend's big-eared bats (First Solar *2013e*). Over one-hundred bats exited the mine on May 16, 2011 and a torpid Townsend's big-eared bat was found when the mine was entered (Brown 2011). Although not detected during echolocation surveys within the Project site, this species could forage over the project area and not be detected due to their characteristically faint calls (First Solar *2013e*). The Umberci Mine has been gated by BLM to protect the roosting bats.

3.22.2 Applicable Regulations, Plans, and Standards

The proposed project must comply with state and federal laws and regulations that address state and federally listed species, as well as other sensitive species and their habitats.

3.22.2.1 Federal

Endangered Species Act, Section 7. The ESA was passed by the U.S. Congress in 1973, and has since been amended several times. The ESA and 50 CFR 17.1 et seq. designate and provide for protection of threatened and endangered plants and animals and their critical habitat. Procedures for addressing federally listed species follow two principal pathways, both of which require consultation with the USFWS, which administers the ESA for all terrestrial species. The first pathway (ESA Section 10(a), Incidental Take Permit) is set up for situations in which a non-federal government entity (where no federal nexus exists) must resolve potential adverse impacts to species protected under the ESA. The second pathway (ESA Section 7, Consultation) involves projects with a federal connection or requirement; typically these are

projects sponsored or permitted by a federal lead agency. For the Project, the federal lead agency (the BLM) initiates and coordinates the steps below for Section 7:

- Preparation of biological assessment assessing potential for the project to adversely affect listed species
- Coordination between resource agencies to assess impacts and proposed mitigation
- Development of appropriate mitigation for adverse impacts on federally listed species

The USFWS ultimately issues a final Biological Opinion on whether the project would affect federally listed species. If agency review of a project determines that a Project can be implemented without jeopardizing a federally protected species, the Biological Opinion may include an Incidental Take Statement of anticipated incidental take accompanied by the appropriate and reasonable mitigation measures to minimize such take.

BLM Sensitive Species

BLM Sensitive Species are species designated by the State Director that are not federal listed proposed, or candidate species, or State listed because of potential endangerment. BLM's policy is to "ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered." Various offices of the BLM maintain a list of special status plant and wildlife species that are to be considered as part of the management activities carried out by the BLM on the lands that they administer.

California Desert Conservation Area Plan

The California Desert Conservation Area (CDCA) covers approximately 25 million acres of land in southern and southeastern California, with approximately 10 million acres being administered by the BLM. The CDCA Plan is a comprehensive, long-range plan with goals and specific actions for the management, use, development and protection of the resources and public lands within the CDCA and is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality.

The Wildlife Element of the CDCA Plan specifies the goals, planned actions, and implementation for the management of wildlife resources. The goals are to avoid, mitigate, or compensate for impacts of conflicting uses on wildlife, develop and implement plans to provide for special management of habitat, manage Federal and state-listed species so that their continued existence is not jeopardized, manage BLM sensitive species so that the potential for Federal or state listing is minimized, and include consideration of crucial habitats of sensitive species in all decisions. The Plan has been amended several times, including the designation of Desert Wildlife Management Areas (DWMAs) and Areas of Critical Environmental Concern (ACECs) for the protection of wildlife species.

Migratory Bird Treaty Act (MBTA)

The federal MBTA of 1918 (16 U.S.C. 703-712) provides protection for a majority of bird species occurring in the U.S. The MBTA makes it unlawful to pursue, hunt, take, capture, kill, or sell birds listed under the MBTA. Some common species are not covered under the MBTA and include the European starling (*Sturnus vulgaris*), the house sparrow (*Passer domesticus*), the rock pigeon (*Columba livia*), and game species such as grouse, turkey, and ptarmigan. There have been several amendments to the original law (including the Migratory Bird Treaty Reform Act of 1998). Currently, penalties include a fine of not more than $15,000 or imprisonment of not more than two years for misdemeanor violations of the act. The statute does not discriminate

between live or dead birds and grants full protection to any bird parts, including feathers, eggs, and nests. Currently, 836 bird species are protected by the MBTA. The USFWS Migratory Birds and Habitat Program primarily operates under the auspices of the MBTA.

Bald and Golden Eagle Protection Act (BGEPA)

The BGEPA prohibits any form of possession or taking of either bald eagles or golden eagles. A 1962 amendment created a specific exemption for possession of an eagle or eagle parts (e.g., feathers) for religious purposes of Indian tribes. The BGEPA prohibits take, which is defined as to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, disturb, or otherwise harm eagles, their nests, or their eggs." Under the BGEPA, "disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: (1) injury to an eagle; (2) decrease in its productivity by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

On September 11, 2009, the USFWS set in place rules (50 CFR parts 13 and 22) establishing two new permit types: (1) take of bald and golden eagles that is associated with, but is not the purpose of, the activity; and (2) purposeful take of eagle nests that pose a threat to human or eagle safety. Specifically, the BGEPA authorizes intentional take of eagle nests where: necessary to alleviate a safety hazard to people or eagles; necessary to ensure public health and safety; the nest prevents the use of a human-engineered structure; and/or the activity, or mitigation for the activity, will provide a net benefit to eagles; and allows inactive nests to be taken only in the case of safety emergencies.

As described in the USFWS Draft Eagle Conservation Plan (ECP) Guidance dated January 2011 (USFWS 2011b), the USFWS recommends that project proponents prepare an ECP to avoid, minimize, and mitigate project-related impacts to eagles to ensure no net loss to the golden eagle population. Pursuant to BLM Instructional Memorandum (IM) 2010-156, the BLM will provide USFWS an ECP for review. If take is deemed likely, the applicant will seek an Eagle Take Permit.

Rule changes made in September 2009 finalized permit regulations to authorize limited take of these species associated with otherwise lawful activities. These new regulations establish permit provisions for intentional take of eagle nests under particular limited circumstances (USFWS 2009). USFWS is currently accepting public comment in preparation for revising their regulations governing these take permits (USFWS 2012).

Desert Tortoise Recovery Plan and Critical Habitat Designation of 1994

The Desert Tortoise Recovery Plan established a strategy for the recovery and eventual de-listing of the Mojave population of desert tortoise. Six recovery units with 14 DWMAs were originally proposed in Arizona, California, Nevada, and Utah. Based on information in the Recovery Plan, 12 CHUs were established for the Mojave population of desert tortoise by the USFWS on February 8, 1994 (59 FR 5820, USFWS 1994).

A revised recovery plan was prepared in 2011, which re-delineated the recovery units and reduced them from six units to five units. The recovery units cover the entire range of the Mojave population of desert tortoise (USFWS 2011a).

Land Designations and Plans

Federal

The Stateline Solar Farm Project is located on federal land under BLM's jurisdiction and is therefore subject to the provisions of BLM's CDCA Plan (BLM 1980). As an amendment to the CDCA Plan, BLM produced the NEMO Plan amendments (BLM 2002). This document consists of proposed management actions and alternatives for public lands in the NEMO Planning Area. The Stateline project is located in the southeastern portion of the NEMO Planning Area Boundary.

The BLM has worked with the USFWS to develop a variety of land designations as tools to protect sensitive biological resources, including the desert tortoise. The siting of the Stateline Solar Farm Project considered the management direction of these designations, as described below:

- **Desert Wildlife Management Areas** are general areas recommended by the Desert Tortoise Recovery Plan (USFWS 1994; USFWS 2011a) within which recovery efforts for the desert tortoise would be concentrated. DWMAs had no specific legal boundaries in the 1994 Recovery Plan. The BLM formalized the general DWMAs from the 1994 Recovery Plan through its planning process and administers them as Areas of Critical Environmental Concern (see below). The Stateline Solar Farm Project does not fall within any DWMA and is located less than 2 miles west of the Ivanpah Valley DWMA/ACEC.
- **Area of Critical Environmental Concern** are specific, legally defined, BLM designations where special management is needed to protect and prevent irreparable damage to important historical, cultural, scenic values, fish and wildlife, and natural resources or to protect life and safety from natural hazards. The Stateline Solar Farm Project is not included within any designated ACEC and is located less than 2 miles west of the Ivanpah Valley DWMA/ACEC and the Clark Mountain ACEC is approximately 4 miles west of the site.
- **Critical Habitat** consists of specific areas defined by the USFWS as areas essential for the conservation of the listed species, which support physical and biological features essential for survival and that may require special management considerations or protection. Critical habitat for the desert tortoise was designated in 1994, largely based on proposed DWMAs in the Recovery Plan. The Stateline Solar Farm Project is approximately 3.5 miles from the nearest desert tortoise critical habitat (Ivanpah CHU).

BLM provides management direction for species such as desert tortoise within the NEMO, which include five geographical areas of tortoise habitat in the planning area. These areas include an Ivanpah Valley and a North Ivanpah Valley area (BLM 2002), with the Stateline Solar Farm Project located within the Ivanpah Valley habitat area. Current designations for both Ivanpah areas are as Category III desert tortoise habitat (BLM 2002). Category III management goals are to limit tortoise habitat and population declines to the extent possible by mitigating impacts.

Potential take of the desert tortoise, listed as threatened by the USFWS, requires compliance with the federal ESA (16 U.S.C. §§ 1531 et seq.). "Take" of a federally-listed species is prohibited without an Incidental Take Statement, which would be obtained through a Section 7 consultation between BLM and the USFWS. A Biological Assessment (BA) for the Stateline Solar Farm Project *was* submitted *by BLM* to USFWS on *January 2, 2013* to initiate consultation regarding protected species. *USFWS completed consultation by issuing the Biological Opinion for the Project on September 30, 2013. The Biological Opinion was developed jointly for the Stateline project and the nearby Silver State South project, in order to consider the effects of both projects. The Biological Opinion concluded that the Proposed Actions are not likely to*

appreciably diminish reproduction, numbers, or distribution of the tortoise in Ivanpah Valley, and would not affect desert tortoises within the remainder of the Eastern Mojave Recovery Unit or the remainder of the range of the Mojave population of the desert tortoise.

3.22.2.2 State

California Endangered Species Act (CESA). The CESA is similar to the federal ESA, and is administered by the CDFW. CESA was enacted to protect sensitive resources and their habitats. The CESA prohibits the take of CESA-listed species unless specifically provided for under another state law. CESA does allow for incidental take associated with otherwise lawful development projects. The CDFW recommends the development of appropriate mitigation planning to offset project-induced losses of listed species. A project applicant is responsible for consulting with the CDFW, if applicable, to preclude activities that are likely to take any CESA-listed threatened or endangered species then an Incidental Take Permit (CDFG Code Section 2081) will be required.

California Department of Fish and Game Code §1600-1603, Streambed Alteration Agreement. This statute regulates activities that would "substantially divert or obstruct the natural flow of, or substantially change the bed, channel, or bank of, or use material from the streambed of a natural watercourse" that supports fish or wildlife resources. A stream is defined as a body of water that flows at least periodically or intermittently through a bed or channel having banks, and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. A Streambed Alteration Agreement (SAA) must be obtained for any Proposed Project that would result in an adverse impact to a river, stream, or lake. If fish or wildlife would be substantially adversely affected, an agreement to implement mitigation measures identified by the CDFW would be required. An SAA would likely be required for impacts to drainages in California.

California Fish and Game Code §3503. This section prohibits the taking and possession of any bird egg or nest, except as otherwise provided by this code or subsequent regulations. The administering agency is the CDFW.

California Fish and Game Code §3503.5. This section prohibits the taking and possession of eggs or nest of any bird classified as a Falconiformes or Strigiformes (birds-of-prey), except as otherwise provided by this code or subsequent regulations. The administering agency is the CDFW.

California Fish and Game Code §3511, §4700, §5515, and §5050. These sections prohibit the taking and possession of birds, mammals, fish, and reptiles listed as "fully protected." The administering agency is the CDFW.

California Fish and Game Code §3513 – Adoption of the Migratory Bird Treaty Act. This section provides for the adoption of the MBTA's provisions. As with the MBTA, this state code offers no statutory or regulatory mechanism for obtaining an incidental take permit for the loss of non-game migratory birds. The administering agency is the CDFW.

California Code of Regulations §670.2 and §670.5. The code lists wildlife and plant species listed as threatened or endangered in California or by the federal government under ESA. Species considered future protected species by the CDFW are designated California species of special concern (CSC). CSC species currently have no legal status, but are considered indicator species useful for monitoring regional habitat changes.

California Code of Regulations Title 14 §460. *The CCR lists the desert kit fox as a non-game species that may not be hunted or captured.*

CEQA Guidelines §15380. CEQA Guidelines §15380(b) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria.

4.0 Environmental Consequences

4.1 Introduction

This chapter assesses environmental consequences or impacts that would result from the implementation of the Proposed Action and alternatives described in Chapter 2. These analyses consider direct, indirect, and cumulative impacts of the Proposed Action and alternatives, including both short-term impacts during construction and decommissioning, and long-term impacts during operations. This chapter also identifies mitigation measures to address adverse impacts and summarizes the residual and unavoidable adverse impacts associated with each resource area. The scope of the impact analyses presented in this chapter is commensurate with the level of detail for the alternatives provided in Chapter 2, Proposed Action and Alternatives, and the availability and/or quality of data necessary to assess impacts. Baseline conditions for assessing the potential environmental impacts are described in Chapter 3.

National Environmental Policy Act (NEPA) Methodology

The methodology for this assessment conforms with the guidance found in the following sections of the Council on Environmental Quality (CEQ) regulations for implementing NEPA: 40 Code of Federal Regulation (CFR) Section 1502.24, *Methodology and Scientific Accuracy*; 40 CFR Section 1508.7, *Cumulative Impact*; and 40 CFR Section 1508.8, *Effects*. The CEQ regulations require agencies to "rigorously explore and objectively evaluate" the impacts of the alternatives.

California Environmental Quality Act (CEQA) Methodology

The methodologies used in the impact assessment also conform to the requirements of CEQA, Public Resources Code Section 21000 et seq.), including the *Guidelines for Implementation of the CEQA*, Title 14 California Code of Regulations (CCR) section 15000 et seq.

Under CEQA, a "project" is defined as "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment" (CEQA Guidelines 15378(a)). In the case of the Proposed Project, the County's authority is limited to approval of well permits for the groundwater production and monitoring wells. Mitigation of the effects of the solar facility itself, and the land use plan amendments, are the responsibility of BLM to identify and to require of the Applicant.

4.1.1 Analytical Assumptions

The impact analysis in this chapter was conducted with the following assumptions:

- The laws, regulations, and policies applicable to the Bureau of Land Management (BLM) authorizing Right-of-Way (ROW) grants for renewable energy development facilities would be applied consistently for all action alternatives;
- San Bernardino County's CEQA requirements would be applied consistently for *those portions of the* action alternatives *for which it has approval authority*;
- The proposed facility would be constructed, operated, maintained, and decommissioned as described for each action alternative in Chapter 2; and

- Short-term impacts are those expected to occur during the construction phase, the first five years of the operation and maintenance phase, and during project decommissioning. Long-term impacts are those that would occur after the first five years of operation and maintenance until the decommissioning phase is complete, a period of 25 years. Long-term impacts, such as vegetation impacts, could also potentially extend beyond the end of the decommissioning phase.

4.1.2 Types of Effects

NEPA Impact Analysis

The potential impacts from those actions that would have direct, indirect, and cumulative effects were considered for each resource. The terms "effect" and "impact" as used in this document are synonymous and could be beneficial or adverse.

Direct effects are caused by the action and occur at the same time and place as the action; indirect effects are caused by the action and occur later in time or further in distance, but are still reasonably foreseeable based on the scope of the action (40 CFR 1508.8). Cumulative impacts are those effects resulting from the incremental impacts of an action when combined with other past, present, and reasonably foreseeable future actions, regardless of which agency or person undertakes such actions (40 CFR 1508.7). Cumulative impacts could result from individually insignificant but collectively significant actions taking place over a period of time. Short-term impacts occur only for a short time after implementation of an action; for example, construction noise impacts from construction activities would be considered short-term in nature. In contrast, long-term effects occur for an extended period after implementation of an action; for example, operational noise during facility operations would be a long-term impact, as it would continue throughout the entire period of operations. For the purposes of this document, "short-term" and "long-term" are defined in Section 4.1.1.

Section 1502.16 of the CEQ regulations forms the scientific and analytic basis for the comparison of alternatives. This chapter consolidates the discussions of those elements required by sections 102(2)(C)(i), (ii), (iv), and (v) of NEPA which are within the scope of this Environmental Impact Statement (EIS)/Environmental Impact Report (EIR), and as much of Section 102(2)(C)(iii) as is necessary to support the comparisons. The discussion includes the environmental impacts of each of the alternatives, including any adverse environmental effects which cannot be avoided, the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented.

Under NEPA, significance is defined by the CEQ as a measure of the intensity and context of the effects of a major federal action on the human environment (Section §1508.27). The BLM NEPA Handbook reiterates this directive, stating that the document should "focus the discussion of effects on the context, intensity, and duration." Intensity refers to the severity or level of magnitude of impacts. Public health and safety, proximity to sensitive areas, level of controversy, unique risks, or potentially precedent-setting effects may all be considered in determining intensity of effect. Context means that the effects of an action must be analyzed within a framework or within physical or conceptual limits. NEPA does not require that federal agencies make a finding of significance for an EIS. Under NEPA, impacts, whether significant or not, are disclosed and analyzed. *Impacts are to be discussed in proportion to their significance; only brief discussions of other than significant issues is required.* Whenever possible, this document differentiates between short-term and long-term impacts.

For impacts identified as adverse, mitigation which would either avoid or minimize the adverse effect of the impact is identified, and would be required as a condition of the right-of-way grant.

CEQA Impact Analysis

Under CEQA, impacts resulting from *the County's action (permitting of groundwater production and monitoring wells)* are evaluated using significance thresholds, as *listed* in the Appendix G checklist of CEQA. For each issue *listed* in the checklist, a determination is made that there is no impact, a less than significant impact, a significant impact, a potentially significant impact, or a significant and unavoidable impact. If an impact exceeds a threshold, it is deemed a significant impact. Significant impacts under CEQA require *that the EIR identify feasible mitigation measures that could avoid or substantially lessen the project's significant environmental impacts.* For the purposes of the analysis in Chapter 4, the terms *significance* or *significant* are used only to describe impacts under CEQA. *In addition to the impacts associated with the well permitting action, the EIR also evaluates and reaches a significance determination for project components that are outside of the County's jurisdiction, including the construction, operation, and decommissioning of the solar facility. These analyses are presented for informational purposes, although the County has no authority over these activities.*

4.1.3 Resources and Resource Uses Not Affected or Present in the Action Area

Resources, BLM program areas, or other aspects of the human environment that are not affected or present in the proposed facility area include: wild and scenic rivers, national scenic or historic trails, monuments, and national recreation areas; cooperative management and protection areas; outstanding natural areas; forest reserves; back country byways; and wetlands.

4.1.4 Mitigation Measures Included in the Analysis

Mitigation Measures under NEPA

The BLM NEPA Handbook (H-1790-1) discusses mitigation measures as specific means, measures, or practices that would reduce or eliminate effects of the proposed action or alternatives. Mitigation may be used to reduce or avoid adverse impacts whether or not they are significant in nature. In an EIS, the BLM must identify *and analyze measures to mitigate the adverse environmental impacts of a proposed action*. The Handbook distinguishes between "Design Features of the Proposed Action", which are incorporated into the Plan of Development (POD) for the Proposed Action, and mitigation measures, which are requirements identified and analyzed in an EIS and may be required as conditions of approval of a ROW grant. For this Stateline Solar Farm project, the Applicant has incorporated environmental protection measures into their POD (First Solar *2013*). In addition, the Applicant has developed a series of management plans that, as components of the POD, provide additional measures, Best Management Practices, and other elements included in the design of the Project in order to reduce impacts. These measures are described as components of the Applicant's Proposed Action in the description of the Proposed Action and alternatives provided in Chapter 2*. In the resource sections that follow, the BLM has developed additional mitigation measures (if appropriate) that may include specifying the components of a proposed management plan, modifying components of the management plan, or providing other detailed measures that are not already addressed in the POD or Applicant-proposed management plans.*

Mitigation Measures Under CEQA

Unlike NEPA, CEQA requires that a significance determination be made for each significance criteria evaluated in an EIR. Significance criteria, the basis for which is set forth in the CEQA Guidelines Environmental Checklist (Appendix G), are identified for each environmental resource area. The significance criteria serve as a benchmark for determining if a project would result in significant adverse environmental impacts when evaluated against the baseline or existing environmental conditions. Impacts are assessed relative to each impact criterion to determine whether the project would have no impact, a less-than-significant impact, less than significant with mitigation, or a significant impact. Impacts are quantified to the extent possible. In addition, the determination of an impact's significance for CEQA purposes is derived from standards set by *the applicable* regulatory agencies on the federal, State, and local levels; knowledge of the effects of similar past projects; professional judgment; and plans and policies adopted by governmental agencies.

CEQA requires that mitigation measures be identified to reduce or avoid significant impacts. The CEQA Guidelines §15370 define mitigation as:

(a) Avoiding the impact altogether by not taking a certain action or parts of an action;

(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation;

(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and

(e) Compensating for the impact by replacing or providing substitute resources or environments.

If impacts remain significant after all feasible mitigation is considered, (i.e., continue to exceed the threshold of significance identified in the impact criteria), the analysis must conclude that the impact is significant and unavoidable.

Mitigation Measure Summary

For impacts identified in the analyses in the resource sections in this chapter, mitigation measures have been developed that would be implemented during all appropriate phases of the project from initial ground breaking to operations, and through closure and decommissioning. The mitigation measures include a combination of the following:

- Specifying that the components of a management plan be implemented, modifying components of the management plan, or providing other detailed measures that are not already addressed in the POD or management plans;
- Regulatory requirements of other federal, state, and local agencies; and
- Additional BLM-proposed mitigation measures, standard ROW grant terms and conditions, and best management practices (BMPs).

These requirements are generically referred to as "mitigation measures" throughout this Plan Amendment (PA) and EIS/EIR. Because these mitigation measures are derived from a variety of sources, they also are required, and their implementation regulated, by the various agencies.

Many of the mitigation measures are required by agencies other than the BLM. For instance, the Endangered Species Act (ESA) Section 7 mitigation measures of the U.S. Fish and Wildlife Service (USFWS) will be identified in their Biological Opinion (BO), and the National Historic Preservation Act (NHPA) Section 106 mitigation measures will be specified in a Memorandum

of Agreement (MOU). The Applicant will be required by the Record of Decision (ROD) and the ROW grant to comply with *certain more stringent* requirements of other agencies (see, e.g., 43 CFR 2805.12(a), (i)(6) (more stringent state standards for public health and safety, environmental protection and siting, constructing, operating, and maintaining any facilities and improvements on the ROW). Any non-compliance with implementation of these other Federal or state requirements may affect the approval status of *any* ROD and ROW grant.

The BLM *has* identified potential impacts to public land resources that *require the development of* individual mitigation measures by the BLM. If a ROW is granted, these mitigation measures *will* be incorporated into the ROW grant and, if so, will be monitored and managed by the BLM. In addition, standard terms and conditions for approval of the use of public land will be identified in the ROD and incorporated into the proposed ROW grant and therefore will be enforced by the BLM as part of any ROW grant approved for the project.

4.1.5 Cumulative Scenario Approach

This PA and EIS/EIR analyzes the cumulative impacts of the construction, operation and maintenance, closure and decommissioning of the components of the Proposed Action, taking into account the effects in common with other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. The cumulative effects analysis highlights past actions that are closely-related either in time or space (i.e., temporally or in geographic proximity) to the Proposed Action, present actions that are ongoing at the same time this EIS/EIR was being prepared; and reasonably foreseeable future actions, including those for which there are existing decisions, funding, formal proposals, or which are highly probable, based on known opportunities or trends.

NEPA and CEQA have similar definitions of “cumulative impact.” According to the CEQ’s regulations implementing NEPA, “cumulative impact” or effect “is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR §1508.7). “Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR §1508.7).

Under CEQA Guidelines, “a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts” (14 CCR §15130[a][1]). Cumulative impacts must be addressed if the incremental effect of a project, combined with the effects of other projects, is “cumulatively considerable” (14 CCR §15130[a]). Such incremental effects are to be “viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects” (14 CCR §15164[b][1]). Together, these projects compose the cumulative baseline that forms the basis of the cumulative impact analysis.

Table 4.1-1 (located at the end of this section) provides a comprehensive listing of all existing and foreseeable projects that could contribute to a cumulative impact on the environment. Projects listed include renewable energy projects located on BLM-administered lands and/or private lands, other BLM actions/activities, and projects identified by local governments, such as San Bernardino. Table 4.1-1 presents the project name and owner, location, type, status, total acres, and a brief description of each project, to the extent that the information is available. Most of the projects listed in Table 4.1-1 have been, are being, or would be required to undergo their own independent environmental review under NEPA or CEQA or both, as applicable. Figure 4.1-1 shows the location of each of the projects listed in Table 4.1-1 using a corresponding identification number.

For the Proposed Action, the cumulative scenario for each potentially affected resource includes all or a portion of the projects identified in Table 4.1-1. Table 4.1-2 (located at the end of this section) identifies each potentially affected resource, the cumulative analysis region of interest (which is the geographic extent for each cumulative effects resource/issue), elements to consider, and which projects from the full list of project identified in Table 4.1-1 are located or would occur within the cumulative analysis impacts area for that resource.

With the exception of climate change, which is a global issue, the BLM has identified the California desert as the largest area within which cumulative effects could be assessed depending on the resource. However, within the desert region *and in keeping with its policy*, the specific area of cumulative effect varies by resource. For each resource, the geographic scope of analysis is based on the topography surrounding the proposed facility and the natural boundaries of the resource affected, rather than jurisdictional boundaries. Table 4.1-2 identifies the relevant geographic scope for the evaluation of cumulative impacts for each identified resource.

While each project identified in Tables 4.1-1 and 4.1-2 have their own implementation schedules, these schedules may or may not coincide or overlap with the schedule of the Proposed Action or alternatives. To be conservative the cumulative analysis assumes that all projects in the cumulative scenario are built and operating during the construction, operation, maintenance and decommissioning of the Proposed Action *and their effects are thusly identified*.

Table 4.1-1. Cumulative Projects List

ID Number	Project Name and Ownership	Location	Project Type	Status	Acres	Project Description
Former and Currently Existing Projects						
1	Interstate 15 (Caltrans)	Linear project running from Las Vegas to Los Angeles	Highway	Existing	N/A	Interstate 15 (I-15) is a major east-west route for trucks delivering goods to and from California, and for tourist access to Las Vegas. It is a four lane divided highway in the Ivanpah Valley region.
2	Union Pacific Railroad	Linear project running through western Ivanpah Valley	Railroad	Existing	N/A	Transcontinental railroad line
3	AT&T and Sprint Communication Cables	Linear project running through western Ivanpah Valley	Communication	Existing	N/A	Fiber-optic communication transmission cables
4	Kern River Gas Transmission Pipeline	Linear project from Mountain Pass to Las Vegas, passing on western edge of Ivanpah Valley.	Natural gas pipeline	Existing	N/A	Natural gas transmission pipeline.
5	Calnev Petroleum Products Pipeline, Kinder Morgan.	Linear project from Mountain Pass to Las Vegas, passing through Ivanpah Dry Lake.	Petroleum products pipeline	Existing	N/A	Two co-located petroleum products pipelines.
6	Walter Higgins Bighorn Generating Station	Near Primm, Nevada	Natural gas power plant	Existing	unknown	570 megawatt (MW) Natural-gas-fired power plant
7	First Solar Silver State Solar Project (BLM NVN 085077)	Approximately 2 miles east of Primm, Nevada; Ivanpah Valley	Solar energy (renewable)	Phase I (50 MW) completed.	2,967 acres	Phase I (50 MW) completed. Phase 2 (350 MW) being evaluated in EIS.
8	Molycorp Minerals LLC	Mountain Pass	Mine	Existing	2,222 acres	Rare earth minerals mine. Includes groundwater production wells in Ivanpah Well Field located on Nipton Road.

Table 4.1-1. Cumulative Projects List

ID Number	Project Name and Ownership	Location	Project Type	Status	Acres	Project Description
9	Los Angeles Department of Water and Power (LADWP) and Southern California Electric (SCE) Transmission lines	Eastern Ivanpah Valley	Electricity transmission line	Existing	N/A	Several existing transmission lines in approved utility corridors
10	Primm Resorts, including Buffalo Bills, Primm Valley Resort, Whiskey Pete's, and worker housing.	Primm, Nevada	Resort	Existing	unknown	Resort consisting of casinos and hotels. Includes groundwater production wells located within Stateline Project Study Area.
11	Primm Valley Golf Club	Ivanpah Valley 2 miles south of Primm.	Recreation	Existing	445 acres	Golf Course. Includes groundwater production wells located just west of the Primm Valley Golf Course, approximately 1 mi south of the proposed Stateline facility.
12	Colosseum Mine	Clark Mountain area	Mining	Closed and Reclaimed	unknown	Former gold mine.
13	Clark Mountain Grazing Allotment	Ivanpah and mesquite Valleys	Grazing	existing	93,500 acres	Active grazing allotment
14	Non-motorized open-space recreational activities	Ivanpah Dry Lake	Recreation	existing	N/A	Permitted national and international landsailing, kite bugy and long distance archery competitive events Approximately 200 casual use dry lake access permits issued annually

Table 4.1-1. Cumulative Projects List

ID Number	Project Name and Ownership	Location	Project Type	Status	Acres	Project Description
Reasonably Foreseeable Projects in Ivanpah Area						
15	Calnev Pipeline Expansion Project, Kinder Morgan.	Along existing pipeline ROW from Mountain Pass, through Ivanpah Dry Lake, and past Primm, Nevada.	Petroleum products pipeline	Draft EIS issued in March 2012	2,841 acres	Addition of new 16-inch petroleum products pipeline to the existing pipeline system.
16	Kern River Mountain Pass Lateral Project	Mountain Pass	Natural gas pipeline	*Construction completed 2012*.	104 acres (assume 100 foot wide ROW)	An approximately 8.6-mile, 8-inch-diameter pipeline extending from Kern River's mainline to the Molycorp Facility.[3]
17	Molycorp Minerals, LLC, Phoenix Project	Mountain Pass	Mine Expansion	Under construction	Within 2,222 acre footprint of existing mine	Expansion of existing rare earth minerals mine.
18	CalTrans, Joint Port of Entry (JPOE) (CA-690-EA06-01)	Between Yates Well Road and Nipton Road, San Bernardino County	Transportation	Caltrans submitted a Recreation and Public Purposes Act Lease application to the BLM for the JPOE facility. Construction is scheduled to begin in *2013* and take approximately 19 months.[4,5]	133 acres	The Joint Port of Entry would include an Agricultural Inspection Facility and a Commercial Vehicle Enforcement Facility located on the north side of Interstate 15 between Nipton Road and Yates Well Road.
19	BrightSource Ivanpah Solar Electric Generating Station (SEGS) Project (BLM ROW 048668, 049502, 049503, 049504, and 049508)	Ivanpah Valley, California	Solar energy (renewable)	Currently under construction, estimated to be completed in 2014.	3,471 acres	370 MW solar facility using power tower technology. Includes groundwater production wells located between Units 1 and 2, approximately 1 mi south of proposed Stateline facility.

Table 4.1-1. Cumulative Projects List

ID Number	Project Name and Ownership	Location	Project Type	Status	Acres	Project Description
20	Eldorado-Ivanpah Transmission Project (EITP), Southern California Edison	Transmission line in corridor between Eldorado Valley, through Primm, to new Ivanpah substation located within Ivanpah SEGS facility.	Electricity transmission	*Construction* completed in 2013	480 acres	New 115-kilovolt (kV) electricity transmission line.
21	Southern Nevada Supplemental Airport (SNSA) and SNSA Ivanpah Airport Environs Overlay	Along the I-15 Corridor near Primm, Nevada	Airport	While the SNSA has not been approved or constructed, the South County Land Use Plan contains policies related to the SNSA, and the land is considered reserved for the future airport. The SNSA is currently on hold.	5,934-acre site; 17,000-acre total area for buffer zone	Site reserved for a new International Airport to supplement the McCarran International Airport in Las Vegas.
22	First Solar Silver State Solar Project (BLM NVN 085077)	Approximately 2 miles east of Primm, Nevada; Ivanpah Valley	Solar energy (renewable)	Phase I (50 MW) completed. Phase 2 (350 MW) being evaluated in EIS.	2,967 acres	Three photovoltaic power plants totaling 400 MW.
23	DesertXpress	*Generally following* the I-15 between Victorville and Las Vegas. *In the vicinity of the Stateline project, the alignment diverges from I-15 and follows the western edge of Ivanpah Valley to the west of north of the proposed Stateline project.*	Transportation	*ROD was signed on 10/31/2011, and ROW grants were issued on 12/19/2011.*	For purposes of analysis, acreage in vicinity of project site is assumed to be based on 40 mile-long by 500-foot wide corridor, or 2,424 acres.	Installation of 180 miles of train tracks for a commercial high-speed electric train that would operate between Victorville, California and Las Vegas, Nevada.

Table 4.1-2. Cumulative Projects Within the Geographic Scope of Cumulative Analysis for Each Resource Area

Resource Area/BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Air Resources	Six-mile radius around project site	Particulate matter less than 2.5 microns ($PM_{2.5}$), Particulate matter less than 10 microns (PM_{10}), Ozone (Nitrogen Oxides (NO_x) and colitile organic compounds) VOC as ozone precursors)	• I-15 • Union Pacific Railroad • Clark Mountain Grazing Allotment • Calnev Pipeline Expansion • Molycorp Phoenix Project • Mountain Pass Lateral project • JPOE • Ivanpah SEGS • Eldorado Ivanpah Transmission Project (EITP) • First Solar Silver State Phase 2 • Desert Xpress
Global Climate Change	International, global	Carbon Dioxide Equivalent (CO_{2e})	• Global cumulative impacts
Archaeological and Built Resources	Cultural sites, traditional use areas, and cultural landscapes within approximately a ten-mile radius of the project site	Ground-disturbing activities and the cultural character of the site and its vicinity. Cultural resources, including archaeological and ethnographic resources	• Clark Mountain Grazing Allotment • Calnev Pipeline Expansion • Mountain Pass Lateral project • JPOE • Ivanpah SEGS • EITP • Southern Nevada Supplemental Airport • First Solar Silver State Phase 2 • Desert Xpress
Environmental Justice	A half-mile radius around project site	Significant environmental impacts in the vicinity of the site	• Clark Mountain Grazing Allotment • JPOE • Ivanpah SEGS • EITP • Desert Xpress
Lands and Realty	Lands in the Ivanpah Valley area	Established communities, existing land uses, designated utility corridors (e.g., transmission lines, cellular telephone towers, poles), and existing ROWs	• Calnev Pipeline Expansion • Molycorp Phoenix Project • Mountain Pass Lateral project • JPOE • Ivanpah SEGS • EITP • Southern Nevada Supplemental Airport • First Solar Silver State Phase 2 • Desert Xpress • Clark Mountain Grazing Allotment • Non-motorized recreation on Ivanpah Dry Lake • Modified Ivanpah Desert Wildlife Management Area (DWMA)

Table 4.1-2. Cumulative Projects Within the Geographic Scope of Cumulative Analysis for Each Resource Area

Resource Area/BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Livestock Grazing	Clark Mountain Grazing Allotment	Reduction of acreage, vehicle strikes, release of hazardous materials, reduction in forage.	• Calnev Pipeline Expansion • Molycorp Phoenix Project • Mountain Pass Lateral project • JPOE • Ivanpah SEGS • EITP • Southern Nevada Supplemental Airport • First Solar Silver State Phase 2 • Desert Xpress • Clark Mountain Grazing Allotment • Non-motorized recreation on Ivanpah Dry Lake • Modified Ivanpah DWMA
Mineral Resources	Ivanpah Valley area	Loss of availability of mineral resources, including as a result of access restrictions.	• Clark Mountain Grazing Allotment • Calnev Pipeline Expansion • Molycorp Phoenix Project • Mountain Pass Lateral project • JPOE • Ivanpah SEGS • EITP • Southern Nevada Supplemental Airport • First Solar Silver State Phase 2 • Desert Xpress
Noise	One-mile radius around project site, and projects using same haul routes	Equipment, motor vehicles	• I-15 • Union Pacific Railroad • Clark Mountain Grazing Allotment • Calnev Pipeline Expansion • Walter Higgins Generating Station • Molycorp Phoenix Project • Mountain Pass Lateral project • JPOE • Ivanpah SEGS • EITP • Southern Nevada Supplemental Airport • First Solar Silver State Phase 2 • Desert Xpress

Table 4.1-2. Cumulative Projects Within the Geographic Scope of Cumulative Analysis for Each Resource Area

Resource Area/BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Paleontological Resources	Project site itself	Ground-disturbing activities; rock units with potential high sensitivity or known paleontological resources	• Clark Mountain Grazing Allotment • Calnev Pipeline Expansion • Mountain Pass Lateral project • JPOE • Ivanpah SEGS • EITP • First Solar Silver State Phase 2 • Desert Xpress
Public Health and Safety	Entire San Bernardino County	Waste disposal facilities	• I-15 • Union Pacific Railroad • Clark Mountain Grazing Allotment • Calnev Pipeline Expansion • Walter Higgins Generating Station • Molycorp Phoenix Project • Mountain Pass Lateral project • JPOE • Ivanpah SEGS • EITP • Southern Nevada Supplemental Airport • First Solar Silver State Phase 2 • Desert Xpress • Any waste-generating project in San Bernardino County
Recreation	Ivanpah Valley area	Dispersed recreational opportunities and experiences	• Clark Mountain Grazing Allotment • Calnev Pipeline Expansion • Walter Higgins Generating Station • Molycorp Phoenix Project • Mountain Pass Lateral project • JPOE • Ivanpah SEGS • EITP • Southern Nevada Supplemental Airport • First Solar Silver State Phase 2 • Desert Xpress • Non-motorized recreation on Ivanpah Dry Lake • Modified Ivanpah DWMA • Primm Resorts

Table 4.1-2. Cumulative Projects Within the Geographic Scope of Cumulative Analysis for Each Resource Area

Resource Area/BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Social and Economic Setting	Entire San Bernardino County and Clark County	Flow of goods and services; impacts to local infrastructure and services; ability to meet housing demand; employment/labor demand; possible positive impacts to regional economic sectors and/or adverse community impacts; severance or other tax benefits; ability of communities to absorb impacts.	• Clark Mountain Grazing Allotment • Calnev Pipeline Expansion • Walter Higgins Generating Station • Molycorp Phoenix Project • Mountain Pass Lateral project • JPOE • Ivanpah SEGS • EITP • Southern Nevada Supplemental Airport • First Solar Silver State Phase 2 • Desert Xpress • Primm Resorts
Soil Resources	Project site itself	Erosion	• Clark Mountain Grazing Allotment
Special Designations	Ten-mile radius around project site	Impact on management objectives for specially-designated area	• Clark Mountain Grazing Allotment • Calnev Pipeline Expansion • Molycorp Phoenix Project • Mountain Pass Lateral project • JPOE • Ivanpah SEGS • EITP • Southern Nevada Supplemental Airport • First Solar Silver State Phase 2 • Desert Xpress • Modified Ivanpah DWMA
Transportation and Public Access	Immediate project vicinity	Construction traffic – materials and workers, off-highway vehicles (OHVs), recreation opportunities, changes in viewscape, unauthorized routes	• I-15 • Union Pacific Railroad • Clark Mountain Grazing Allotment • Calnev Pipeline Expansion • Walter Higgins Generating Station • Molycorp Phoenix Project • Mountain Pass Lateral project • JPOE • Ivanpah SEGS • EITP • Southern Nevada Supplemental Airport • First Solar Silver State Phase 2 • Desert Xpress • Modified Ivanpah DWMA

Table 4.1-2. Cumulative Projects Within the Geographic Scope of Cumulative Analysis for Each Resource Area

Resource Area/BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Vegetation Resources	Ivanpah Valley for vegetation and weeds, range for special status plant species.	Ephemeral drainages and natural communities; special status plants; stabilized and partially stabilized dunes and sand transport corridors; invasive plants	• Clark Mountain Grazing Allotment • Calnev Pipeline Expansion • Walter Higgins Generating Station • Molycorp Phoenix Project • Mountain Pass Lateral project • JPOE • Ivanpah SEGS • EITP • Southern Nevada Supplemental Airport • First Solar Silver State Phase 2 • Desert Xpress • Modified Ivanpah DWMA
Visual Resources	Project viewshed and viewshed along I-15 corridor	Project appearance; construction-related dust, light, glint and glare; views from key observation points	• I-15 • Clark Mountain Grazing Allotment • Calnev Pipeline Expansion • Walter Higgins Generating Station • LADWP and SCE Transmission lines • Molycorp Phoenix Project • Mountain Pass Lateral project • JPOE • Ivanpah SEGS • EITP • Southern Nevada Supplemental Airport • First Solar Silver State Phase 2 • Desert Xpress • Modified Ivanpah DWMA
Water Resources	Ivanpah Valley Groundwater Basin and Ivanpah Dry Lake	Hydrology and quality, Basin balance, levels and quality	• Clark Mountain Grazing Allotment • Calnev Pipeline Expansion • Walter Higgins Generating Station • Molycorp Phoenix Project • Mountain Pass Lateral project • JPOE • Ivanpah SEGS • EITP • Southern Nevada Supplemental Airport • First Solar Silver State Phase 2 • Desert Xpress

Table 4.1-2. Cumulative Projects Within the Geographic Scope of Cumulative Analysis for Each Resource Area

Resource Area/BLM Program Area	Geographic Area of Consideration	Elements to Consider	BLM Authorized and Other Known County Projects/Actions/Activities
Wild Horse and Burro	Lands in the Ivanpah Valley area	Established communities, existing land uses, designated utility corridors (e.g., transmission lines, cellular telephone towers, poles), and existing ROWs	• Clark Mountain Grazing Allotment • Calnev Pipeline Expansion • Molycorp Phoenix Project • Mountain Pass Lateral project • JPOE • Ivanpah SEGS • EITP • Southern Nevada Supplemental Airport • First Solar Silver State Phase 2 • Desert Xpress • Clark Mountain Grazing Allotment • Non-motorized recreation on Ivanpah Dry Lake • Modified Ivanpah DWMA
Wildland Fire Ecology	One-mile radius around project site	Mortality of plants and wildlife, loss of forage and cover; changes to the vegetation communities; spread of invasive plants; consequences of subsequent extreme weather events; air quality	• Clark Mountain Grazing Allotment • Calnev Pipeline Expansion • Molycorp Phoenix Project • Mountain Pass Lateral project • JPOE • Ivanpah SEGS • EITP • Southern Nevada Supplemental Airport • First Solar Silver State Phase 2 • Desert Xpress
Wildlife Resources	Desert tortoise - California Desert Conservation Area and adjacent areas in Nevada. Golden eagle and wide-ranging, special status species – Ivanpah Valley and range of special-status species.	Migratory birds, golden eagle, big horn sheep, desert tortoise. Also, mortality and injury; special status wildlife; wildlife movement and connectivity; indirect impacts, including from lighting, collisions, and climate change.	• I-15 • Union Pacific Railroad • Clark Mountain Grazing Allotment • Calnev Pipeline Expansion • Walter Higgins Generating Station • Molycorp Phoenix Project • Mountain Pass Lateral project • JPOE • Ivanpah SEGS • EITP • Southern Nevada Supplemental Airport • First Solar Silver State Phase 2 • Desert Xpress • Modified Ivanpah DWMA

4.2 Air Resources

4.2.1 Methodology for Analysis

Potential effects on air resources from the Proposed Action and alternatives may occur as a result of emissions of criteria pollutants from the construction, operation and decommissioning of the Proposed Action and alternatives. To assess those effects, quantitative emission estimates for criteria pollutants were prepared, based on the Applicant-provided construction and operation assumptions, in order to evaluate the significance of emissions associated with the Proposed Action and alternatives. Additionally, qualitative analyses were performed to determine the significance of potential hazardous air pollutant emissions and odors from the Proposed Action and alternatives. Emissions and impacts of decommissioning of the proposed solar farm were analyzed qualitatively as well. The emissions estimates were compared to applicable air quality regulatory requirements and ambient air quality standards in order to establish impacts on ambient air quality. As needed, mitigation measures were identified to reduce identified emissions and resulting impacts.

4.2.2 CEQA Significance Criteria

The indicators listed below were used to determine the significance of potential impacts to air resources under CEQA. They are based on the significance criteria for air quality listed in the CEQA Environmental Checklist, Appendix G of the CEQA Guidelines and the Mojave Desert Air Quality Management District (MDAQMD) CEQA and Federal Conformity Guidelines. A project would have a significant impact on air quality if it would:

- AR-1: Conflict with or obstruct implementation of the applicable air quality plan;
- AR-2: Violate any air quality standard or contribute to an existing or projected air quality violation;
- AR-3: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- AR-4: Expose the public (especially schools, day care centers, hospitals, retirement homes, convalescence facilities and residences) to substantial pollutant concentrations;
- AR-5: Create objectionable odors affecting a substantial number of people.

Specifically, implementation of the project would have a significant impact on air quality if it would exceed any of the following adopted thresholds presented in the MDAQMD CEQA and Federal Conformity Guidelines, provided below in Table 4.2-1.

As discussed in Section 3.2, PM_{10} is the only pollutant currently in Federal nonattainment in the project area. Therefore, the PM_{10} Federal de minimis threshold is the only de minimis threshold that applies to the project area. As shown in Table 4.2-2, the de minimis threshold for PM_{10} is 100 tons per year. This threshold applies to all direct and indirect emissions generated during construction and operation of the Proposed Action or its alternatives.

Table 4.2-1. MDAQMD Emission Significance Thresholds

Air Pollutant	Annual Threshold (tpy)	Daily Threshold (lbs/day)
Carbon Monoxide (CO)	100	548
Nitrogen Oxides (NO_x)	25	137
Volatile Organic Compounds (VOCs)	25	137
Sulfur Oxides (SO_x)	25	137
Particulate Matter, less than 10 microns(PM_{10})	15	82
Particulate Matter, less than 2.5 microns ($PM_{2.5}$)	15	82

Source: MDAQMD 2011
Notes:
Emission thresholds are given as daily and annual values so that multi phased projects with phases shorter than one year can be compared to the daily value.
tpy = tons per year; lbs/day = pounds per day

Table 4.2-2. General Conformity *de minimis* Thresholds

Air Pollutant	Annual Threshold (tpy)
PM_{10}	100

Source: U.S. Environmental Protection Agency (EPA)
http://www.epa.gov/air/genconform/deminimis.html 2011.
Notes:
tpy = tons per year

4.2.3 Alternative 1: Proposed Action

4.2.3.1 Direct and Indirect Impacts

Construction

Criteria Pollutant Emissions

Construction of the Proposed Action would result in emissions of the following air pollutants: VOCs, NO_x, CO, PM_{10}, $PM_{2.5}$, SO_x.

Emissions from construction would result from fuel combustion and exhaust from construction equipment and vehicle traffic, grading, and use of polluting building materials (e.g., paints and lubricants). Fugitive dust emissions would be generated from earth moving activities such as dozing, grading and material loading/handling, and vehicle trips on paved/unpaved roads. Land disturbance during construction would also result in generation of fugitive dust due to wind erosion. Emissions were estimated based on the following assumptions, project schedule and equipment:

- The annual construction emissions were calculated using a 24-month schedule. The construction is expected to start in October 2014 and end in October 2016.
- Typical construction work schedules are expected to be from 7:00 a.m. to 5:00 p.m., Monday through Friday, which *conforms* with the San Bernardino County noise ordinance restrictions for construction activity of 7:00 a.m. to 7:00 p.m., except Sundays or Federal holidays.
- During construction, the on-site workforce is expected to average approximately 400 employees, with a peak on-site workforce of approximately 600 employees.
- Most construction equipment/vehicles would be brought to the proposed PV generating facility (solar farm) at the beginning of the construction process and would remain on site throughout the duration of the construction activities for which they are needed; they generally would not be driven on public roads while in use for the project.
- Project construction traffic would involve construction worker commuting vehicles, plus periodic truck deliveries of materials and supplies, trash and other off-site truck shipments, and miscellaneous trips by project staff (e.g., supervisors).

- At peak construction, a total of approximately 400 vehicles would make one trip per day to and from the site.
- Truck traffic during construction is expected to average approximately 40 truck trips per day.

Table 4.2-3 shows the type and maximum number of construction equipment and vehicles expected to be in use during the 2 to 4 year construction period, which were included in the construction emissions calculations.

Table 4.2-3. Maximum Construction Equipment/Vehicles On Site by Phase

Number of Pieces	Equipment	Usage (hours per day)	Duration (months)
Site Preparation and Clearing/Grading			
1	Graders	8	8
4	Off-Highway Tractors	8	8
5	Rollers	8	8
2	Rubber Tired Dozers	8	8
3	Scrapers	8	8
Underground Work (boring, trenching, installing conduit)			
9	Dumpers/Tenders	8	8
1	Rollers	8	8
20	Trenchers	8	8
System Installation/Testing			
2	Cranes	7	8
16	Other Construction Equipment	8	8
21	Other Material Handling Equipment	8	8
38	Rough Terrain Forklifts	8	8
8	Tractors/Loaders/Backhoes	8	8

Source: First Solar 2012c

Tables 4.2-4 and 4.2-5 summarize the worst-case daily and annual construction air emissions. Table 4.2-4 compares the maximum daily construction emissions with the applicable MDAQMD thresholds of significance, while Table 4.2-5 compares the maximum annual construction emissions with the MDAQMD thresholds of significance and the General Conformity de minimis thresholds (40 CFR Part 93.153), as shown in Table 4.2-2.

Table 4.2-4. Peak Daily Construction Emissions

	Pollutant Emissions, pounds/day					
Year	**CO**	**ROCs**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
2014	97.39	23.31	183.67	0.18	555.91	63.46
2015	121.26	23.60	180.36	0.21	555.24	62.80
2016	308.42	50.01	367.79	0.69	483.00	63.52
Peak	**308.42**	**50.01**	**367.79**	**0.69**	**555.91**	**63.52**
MDAQMD Thresholds	**548**	**137**	**137**	**137**	**82**	**82**
Exceeds Threshold?	**NO**	**NO**	**YES**	**NO**	**YES**	**NO**

Source: First Solar 2012c
Note:
ROC = reactive organic compound

Table 4.2-5. Annual Construction Emissions

Year	Pollutant Emissions, tons/year					
	CO	ROCs	NO_x	SO_x	PM_{10}	$PM_{2.5}$
2014	3.2	0.8	6.1	0.0	10.9	2.0
2015	14.2	3.0	23.0	0.0	32.3	4.3
2016	27.2	4.6	33.9	0.1	39.3	5.4
Peak	**27.2**	**4.6**	**33.9**	**0.1**	**39.3**	**5.4**
MDAQMD Thresholds	**100**	**25**	**25**	**25**	**15**	**15**
Exceeds Threshold?	**NO**	**NO**	**YES**	**NO**	**YES**	**NO**
De Minimis Levels	**N/A**	**N/A**	**N/A**	**N/A**	**100**	**N/A**
Exceeds Level?	**N/A**	**N/A**	**N/A**	**N/A**	**NO**	**N/A**

Source: First Solar 2012c
Note:
ROC = reactive organic compound

As shown in Table 4.2-4, peak daily construction NO_x and PM_{10} emissions are estimated to exceed the MDAQMD thresholds. As shown in Table 4.2-5, annual NO_x and PM_{10} emissions would exceed MDAQMD thresholds.

Maximum annual NO_x construction emissions would occur in 2016, and maximum annual PM_{10} construction emissions would occur in 2014. The general conformity de minimis threshold for PM_{10} emissions shown in Table 4.2-5 is applicable to the annual emissions of the Proposed Action, as the project site area is designated as nonattainment for the federal PM_{10} standard. Annual PM_{10} emissions would not exceed the Federal de minimis levels.

Since the construction of the Proposed Action would result in NO_x and PM_{10} emissions that exceed MDAQMD daily and annual thresholds, mitigation measures MM-Air-1, MM-Air-2, and MM-Air-3 are required to minimize air quality impacts to the extent feasible, as required by the MDAQMD.

MDAQMD Rule 403.2 requires that soil stabilizers be used on exposed surfaces to reduce fugitive dust emissions. However, even with this mitigation measure the PM_{10} emissions during construction would exceed the MDAQMD regional significance threshold of 82 pounds/day.

NO_x emissions, as an ozone precursor, would have the potential to worsen the air quality in the region where the Project is proposed. Implementation of mitigation measures MM-Air-2 and MM-Air-3 would reduce NO_x emissions during construction. These mitigation measures would ensure that the Proposed Action's NO_x emissions would be reduced to the maximum extent feasible.

Hazardous Air Pollutant Emissions

Emissions of hazardous air pollutants (air toxics) are limited for construction of solar PV generating facilities, and from a health risk perspective are primarily associated with the emissions of diesel particulate matter (DPM). DPM would be emitted from construction equipment and diesel fueled construction vehicles. MM Air-2 would reduce DPM emissions by requiring the use of newer and cleaner off-road diesel engines.

Odors

Construction equipment may create mildly objectionable odors. The specific potential minor odor sources during construction would include equipment and construction vehicle exhausts, and limited asphalt paving.

Fugitive Dust

MDAQMD Rule 403 requires that fugitive dust be controlled so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. Project construction activities would be required to comply with the following applicable Rule 403 measures:

- The construction contractor will ensure that the emissions of fugitive dust from any transport, handling, construction, or storage activity are controlled so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. Note: This measure does not apply to emissions emanating from unpaved roads open to public travel or farm roads. This exclusion shall not apply to industrial or commercial facilities.
- The construction contractor will take every reasonable precaution to minimize fugitive dust emissions from wrecking, excavation, grading, clearing of land and solid waste disposal operations.
- The construction contractor will not cause or allow particulate matter to exceed 100 micrograms per cubic meter ($\mu g/m^3$) when determined as the difference between upwind and downwind samples collected on high volume samplers at the property line for a minimum of 5 hours.
- The construction contractor will take every reasonable precaution to prevent visible particulate matter from being deposited upon public roadways as a direct result of their operations. Reasonable precautions will include, but not be limited to, the removal of any matter from equipment prior to movement on paved streets or the prompt

Operation and Maintenance

Criteria Pollutant Emissions

Operation of the proposed solar farm would result in substantially lower emissions than project construction, since the project would not have any major stationary emission sources. The proposed facility is designed to have essentially no moving parts, no thermal cycle, and no water use for electricity generation.

Operation emissions were based on the assumption that there would be up to 10 roundtrip employee vehicle trips and 10 roundtrip delivery vehicle trips each day during operation. The on-site transformers would have nighttime loss that amount to 1.5 megawatt hours (MWh) per year and the on-site buildings would consume 0.9 MWh per year for a total annual consumption of 2.4 MWh.

The South Coast Air Quality Management District's (SCAQMD's) CalEEMod model was used to calculate the annual operating emissions listed in Table 4.2-6. As shown in Table 4.2-6, the operational emissions would not exceed either the MDAQMD's significance thresholds or the Federal PM_{10} de minimis level.

Table 4.2-6. Annual Operation Emissions

Year	Pollutant Emissions, tons/year					
	CO	ROCs	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Area	0.0	0.015	0.0	0.0	0.0	0.0
Energy	0.0	0.0	0.0	0.0	0.0	0.0
Mobile	0.20	0.020	0.11	0.0	0.0	0.0
Total	**0.20**	**0.035**	**0.11**	**0.0**	**0.0**	**0.0**
MDAQMD Thresholds	**100**	**25**	**25**	**25**	**15**	**15**
Exceeds Threshold?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
De Minimis Levels	**N/A**	**N/A**	**N/A**	**N/A**	**100**	**N/A**
Exceeds Level?	**N/A**	**N/A**	**N/A**	**N/A**	**NO**	**N/A**

Source: First Solar 2012c
Note:
ROC = reactive organic compound

Mitigation measure MM-Air-3 would be required to reduce particulate emissions to the extent feasible in accordance with MDAQMD rules and regulations. Implementation of mitigation measure MM-Air-3 would reduce NO_x emissions to the extent feasible. This mitigation measure would ensure that the Proposed Action's DPM and NO_x emissions are reasonably mitigated.

Proposed facility operations would also result in an indirect emission reduction by displacing emissions associated with fossil-fuel fired power plant electricity generation that otherwise would occur. However, the exact nature and location of such reductions are not known, and would not occur in the immediate vicinity of the project.

Hazardous Air Pollutant Emissions

DPM is a primary hazardous air pollutant. Sources of DPM emissions during operation include operation/maintenance equipment, such as diesel fueled vehicles. DPM emissions during operation would be very limited, considering the frequency of the equipment use and total vehicle miles traveled; and would also be reduced through compliance with MM-Air-3.

Odors

Exhaust from off-road equipment and on-road vehicle use during project operation would not be expected to create objectionable odors. *No specialized equipment, asphalt paving, or other activities other than normal vehicle exhaust would emit odors.*

Decommissioning

The decommissioning of the project would be similar to the construction activities described earlier, and would include demolition and removal of above-ground and subsurface facilities and site contouring and restoration. However, the duration of decommissioning would be shorter than the duration of construction.

Criteria Pollutant Emissions

Because decommissioning would occur after the Project is operational for at least 30 years, it is likely that equipment engine technology would be more advanced and fuel would be cleaner. Therefore, it is anticipated that criteria pollutant emissions during decommissioning would be

substantially less than the emissions estimated for project construction. Nonetheless, in order to provide a conservative estimate, emissions generated during decommissioning are assumed to be similar to the construction emissions shown in Tables 4.2-4 and 4.2-5. As with construction of the project, decommissioning activities would generate PM_{10} and NO_x emissions that exceed MDAQMD daily and annual thresholds. Decommissioning activities would not generate PM_{10} emissions that exceed the Federal PM_{10} de minimis level.

As with construction of the proposed solar project, the decommissioning activities would be required to comply with MDAQMD Rule 403 and Rule 403.2 to control fugitive dust.

Hazardous Air Pollutant Emissions

Similar to criteria pollutant emissions, hazardous air pollutant emissions during decommissioning would be less than that during construction due to advanced equipment engine technology and cleaner fuel.

Odors

Exhaust from off-road equipment and on-road vehicles used during decommissioning would not be expected to create objectionable odors. *No specialized equipment, asphalt paving, or other activities other than normal vehicle exhaust would emit odors.*

Modify Boundary of Ivanpah DWMA

Modification of the Ivanpah DWMA boundary would not generate emissions. No adverse air quality impacts would occur.

4.2.3.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation, and Decommissioning) are presented below based on the CEQA Significance Criteria presented in Section 4.2.2.

AR-1

Construction

The proposed PV solar farm land use is generally consistent with the land uses identified in the San Bernardino County General Plan for the project site. Therefore, implementation of the project would not require amendments to the General Plan or the zoning designations for the project site. Therefore, because the Proposed Action is consistent with the County's General Plan, it is also consistent with the MDAQMD Air Quality Attainment Plan (AQAP).

Operation and Maintenance

The proposed PV solar farm land use is generally consistent with the land uses identified in the San Bernardino County General Plan for the project site. Therefore, implementation of the project would not require amendments to the General Plan or the zoning designations for the project site. Therefore, because the Proposed Action is consistent with the County's General Plan, it is also consistent with the MDAQMD AQAP.

Decommissioning

It is assumed that the decommissioning activities would be approved in a manner that would conform to the requirements of applicable air quality plans at the time of project decommissioning. Therefore, the project would have a less than significant impact.

AR-2

Construction

As shown in tables 4.2-4 and 4.2-5, construction emissions of VOC, CO, $PM_{2.5}$ and SO_x would be below the applicable MDAQMD thresholds of significance. However, even with mitigation, emissions of NO_x and PM_{10} during construction would exceed the MDAQMD daily and annual thresholds, and these emission levels could cause localized exceedances, or contribute significantly to existing exceedances, of the State or federal air quality standards. Therefore, the Proposed Action would have temporary significant and unavoidable NO_x and PM_{10} impacts during construction.

Operation and Maintenance

As shown in Table 4.2-6, operation emissions for all criteria pollutants would remain well under the applicable thresholds of significance. Such levels of emissions would not cause localized exceedances, or contribute significantly to existing exceedances, of the State or Federal air quality standards. Therefore, the Proposed Action would have a less than significant impact on air quality standard attainment during operation.

Decommissioning

The magnitude of decommissioning emissions are expected to be significantly less than those estimated for project construction since decommissioning would occur after at least 30 years of operation, and it is expected that on-road and off-road equipment engine technology would be far more advanced and cleaner than is currently the case. Additionally, the level of activity needed to decommission the project is less than the level of activity needed to construct the project. Nonetheless, based on the conservative assumption that decommissioning activities could be similar to constructive activities, decommissioning of the project could result in NO_x and PM_{10} emissions that exceed MDAQMD thresholds. Therefore, temporary impacts to air quality during decommissioning would be potentially significant and unavoidable.

AR-3

Construction

As noted in Table 3.2-2 in Section 3.2 Air Quality, the project area is in nonattainment for the State and Federal PM_{10} standard. Implementation of mitigation measures MM-Air-1 through MM-Air-3 would reduce fugitive dust emissions and engine NO_x emissions. However, daily and annual construction NO_x and PM_{10} emissions would exceed the MDAQMD thresholds, resulting in a cumulatively considerable net increase of NO_x and PM_{10} during project construction. Therefore, the Proposed Action would have temporary significant and unavoidable NO_x and PM_{10} impacts during construction. These significant cumulative impacts would cease upon completion of construction activities.

Operation and Maintenance

Operation of the Proposed Action would result in substantially lower emissions than project construction and would be well below the MDAQMD thresholds of significance (see Table 4.2-6). Therefore, project's operation emissions would not result in cumulatively considerable net increases of nonattainment pollutants and would have a less than significant impact to regional air quality.

Decommissioning

Due to the reduced activity, and expected reduced emission profile of vehicles when decommissioning would occur, is anticipated that decommissioning emissions of the Proposed Action would be less than construction emissions on a daily and annual basis. Nonetheless, PM_{10} and NO_x emissions generated during decommissioning activities may exceed MDAQMD thresholds. Therefore, the project's decommissioning emissions would result in cumulatively considerable net increases of nonattainment pollutants (PM_{10}) and would have significant impact to regional air quality during decommissioning activities; however, the significant impact would cease upon completion of decommissioning activities. Implementation of mitigation measures MM-Air-1 through MM-Air-3 would reduce PM_{10} and NO_x generated during decommissioning; however, impacts would remain significant and unavoidable.

AR-4

Construction

The closest residence to the project site is located approximately 2 miles east of the site, at the northeast corner of the I-15/Yates Well Road interchange. As shown above in Tables 4.2-4 and 4.2-5, construction emissions of VOC, CO, $PM_{2.5}$ and SO_x would be below the applicable MDAQMD thresholds and would not affect nearby sensitive receptors. Construction NO_x and PM_{10} emissions are expected to exceed the applicable significant thresholds even after mitigated. Based on these exceedances, it is anticipated that the Proposed Action would generate high levels of localized NO_x and PM_{10} emissions. Therefore, construction NO_x and PM_{10} emissions would create temporary unavoidable significant impacts to the nearby residence. These impacts on the residential receptors would vary depending on the location, level and type of activity, the silt content of the soil, and the prevailing weather. In addition, the project's construction emissions, specifically the construction dust emissions, could also adversely affect sensitive plant species and create temporary visual impacts. However, impacts to sensitive receptors would cease upon completion of the construction activities.

Operation and Maintenance

As shown in Table 4.2-6, the Project's operation emissions are below MDAQMD thresholds for criteria pollutants, so the project would have a less than significant impact to sensitive receptors during operation.

Decommissioning

The closest residence to the project site is located approximately 2 miles east of the site, at the northeast corner of the I-15/Yates Well Road interchange. Emissions generated during decommissioning activities may be similar to construction emissions. Therefore, decommissioning NO_x and PM_{10} emissions would create temporary unavoidable significant impacts to the nearby residence. These impacts on the residential receptors would vary

depending on the location, level, and type of activity, the silt content of the soil, and the prevailing weather. In addition, the project's decommissioning emissions, specifically the dust emissions, could also adversely affect sensitive plant species and create temporary visual impacts. However, impacts to sensitive receptors would cease upon completion of the decommissioning activities.

AR-5

Construction

Use of construction equipment and limited asphalt paving may create mild odors. Construction odors would be temporary, are not overly offensive, are types of odors regularly experienced by the public, and the proposed project is not in an inhabited area, so these odors would not negatively affect a substantial number of people. Therefore, the odor impacts from the project construction would be less than significant.

Operation and Maintenance

Use of maintenance equipment may create mild odors. However, operation odors would be minimal due to the low number of sources and lack of any significant odor producing source. Therefore, the odor impacts from the project operation would be less than significant.

Decommissioning

Use of construction equipment during decommissioning may create mild odors. Decommissioning odors would be temporary, are not overly offensive, are types of odors regularly experienced by the public, and the proposed project is not in an inhabited area, so these odors would not negatively affect a substantial number of people. Therefore, the odor impacts from decommissioning of the project would be less than significant.

4.2.4 Alternative 2: 2,385 Ac Alternative

4.2.4.1 Direct and Indirect Impacts

Alternative 2 would occupy two separate parcels north and south of the existing transmission corridor. The Solar Farm site, gen-tie corridor, and access corridor under Alternative 2 would require approximately 2,385 ac of land managed by the BLM, which is 242 ac (or about 12 percent) more than the Proposed Action.

Construction

The same amount of materials and the same equipment would be used during construction under Alternative 2 as the Proposed Action. However, given that the project site under Alternative 2 would be larger than the project site under the Proposed Action, on-site vehicular travel and site disturbance (i.e. clearing and grading) may be incrementally greater under Alternative 2.

The daily construction activities under Alternative 2 would be the same as under the Proposed Action. Therefore, the maximum daily emissions generated by the operation of construction equipment and vehicles on the project site and from off-site vehicles would be the same as under the Proposed Action. However, due to the larger size of the project site under Alternative 2, maximum daily emissions would likely occur more times within a year. Therefore, the annual construction emissions under Alternative 2 would be incrementally greater than the annual

emissions under the Proposed Action, and would therefore have more of an adverse impact than the Proposed Action. In addition, the air quality impacts from construction activities would likely occur for a longer period of time under Alternative 2.

Operation and Maintenance

Air emissions from operation and maintenance under Alternative 2 may be incrementally greater than the Proposed Action due to the additional vehicle travel that may be required for maintenance activities such as panel washing. As such, the operational air quality impacts may be incrementally greater under Alternative 2.

Decommissioning

Alternative 2 would be located on a project site that is about 12 percent larger than the project site of the Proposed Action. As with construction activities under Alternative 2, decommissioning activities would require more onsite vehicle travel due to the larger site, which would result in incrementally more air emissions compared to the Proposed Action. Additionally, the duration of decommissioning activities may be longer than the decommissioning under the Proposed Action, which would result in a longer period of adverse impacts as a result of air emissions from decommissioning activities.

Modify Boundary of Ivanpah DWMA

The modification of the Ivanpah DWMA boundary would be the same under Alternative 2 as it would be under the Proposed Action. As with the Proposed Action, modification of the boundary under Alternative 2 would not generate air emissions.

4.2.4.2 CEQA Significance Determinations

Overall, air emissions under Alternative 2 would have incrementally greater adverse effects than air emissions under the Proposed Action. All impact determinations for the Proposed Action would apply to Alternative 2.

4.2.5 *Revised* Alternative 3: *1,685* Ac Alternative

4.2.5.1 Direct and Indirect Impacts

Revised Alternative 3 would occupy approximately *1,685* ac in a contiguous project footprint in the northeastern portion of the project study area. The project site under *Revised* Alternative 3 is *458 ac (or about 21 percent) smaller* than the project site under the Proposed Action.

Construction

The same amount of materials and the same equipment would be used during construction under *Revised* Alternative 3 as the Proposed Action. *However, given that the project site under Revised Alternative 3 would be smaller than the project site under the Proposed Action, on-site vehicular travel and site disturbance (i.e. clearing and grading) may be incrementally lower under Revised Alternative 3.*

The daily construction activities under *Revised* Alternative 3 would be the same as under the Proposed Action. *However, due to the smaller size of the project site under Revised Alternative 3, maximum daily emissions would likely occur fewer times within a year. Therefore, annual*

construction emissions under Revised Alternative 3 would be incrementally lower than the annual emissions under the Proposed Action. In addition, the air quality impacts from construction activities would likely occur for a shorter period of time under Revised Alternative 3.

Operation and Maintenance

Air emissions from operation and maintenance under Revised Alternative 3 may be incrementally lower than the Proposed Action due to the reduced vehicle travel required for maintenance activities. As such, the operational air quality impacts may be incrementally lower under Revised Alternative 3.

Decommissioning

Revised Alternative 3 would be located on a project site that is about 21 percent smaller than the project site of the Proposed Action. As with construction activities under Revised Alternative 3, decommissioning activities would require less onsite vehicle travel due to the smaller site than the Proposed Action, which would result in incrementally lower air emissions compared to the Proposed Action. Additionally, the duration of decommissioning activities may be shorter than the decommissioning under the Proposed Action, which would result in a shorter period of air emissions from decommissioning activities.

Modify Boundary of Ivanpah DWMA

The modification of the Ivanpah DWMA boundary would be the same under *Revised* Alternative 3 as it would be under the Proposed Action. As with the Proposed Action, modification of the boundary under *Revised* Alternative 3 would not generate air emissions.

4.2.5.2 CEQA Significance Determinations

Overall, air emissions under Revised Alternative 3 would have incrementally lower adverse effects than air emissions under the Proposed Action. All impact determinations for the Proposed Action would apply to Revised Alternative 3. Revised Alternative 3 would not result in a substantial lessening of any significant environmental impacts.

4.2.6 Alternative 4: Reduced Acreage Alternative

4.2.6.1 Direct and Indirect Impacts

Alternative 4 is conceptually similar to the Proposed Action (Alternative 1), but would be placed within a different land area which comprises 1,766 ac. The land area associated with Alternative 4 would be the same as the northern portion of the bifurcated footprint of Alternative 2. The project site under Alternative 4 would be 377 ac (or about 17 percent) smaller than the project site under the Proposed Action.

Construction

The same amount of materials and the same equipment would be used during construction under Alternative 4 as the Proposed Action. However, given that the project site under Alternative 4 would be smaller than the project site under the Proposed Action, on-site vehicular travel and site disturbance (i.e. clearing and grading) may be incrementally lower under Alternative 4.

The daily construction activities under Alternative 4 would be the same as under the Proposed Action. Therefore, the maximum daily emissions generated by the operation of construction equipment and vehicles on the project site and from off-site vehicles would be the same as under the Proposed Action. However, due to the smaller size of the project site under Alternative 4, maximum daily emissions would likely occur fewer times within a year. Therefore, annual construction emissions under Alternative 4 would be incrementally lower than the annual emissions under the Proposed Action. In addition, the air quality impacts from construction activities would likely occur for a shorter period of time under Alternative 4.

Operation and Maintenance

Air emissions from operation and maintenance under Alternative 4 may be incrementally lower than the Proposed Action due to the reduced vehicle travel required for maintenance activities. As such, the operational air quality impacts may be incrementally lower under Alternative 4.

Decommissioning

Alternative 4 would be located on a project site that is about 17 percent smaller than the project site of the Proposed Action. As with construction activities under Alternative 4, decommissioning activities would require less onsite vehicle travel due to the smaller site than the Proposed Action, which would result in incrementally lower air emissions compared to the Proposed Action. Additionally, the duration of decommissioning activities may be shorter than the decommissioning under the Proposed Action, which would result in a shorter period of air emissions from decommissioning activities.

Modify Boundary of Ivanpah DWMA

The modification of the Ivanpah DWMA boundary would be the same under Alternative 4 as it would be under the Proposed Action. As with the Proposed Action, modification of the boundary under Alternative 4 would not generate air emissions.

4.2.6.2 CEQA Significance Determinations

Overall, air emissions under Alternative 4 would have incrementally lower adverse effects than air emissions under the Proposed Action. All impact determinations for the Proposed Action would apply to Alternative 4. Alternative 4 would not result in a substantial lessening of any significant environmental impacts.

4.2.7 Alternative 5: No Action Alternative

4.2.7.1 Direct and Indirect Impacts

Under this alternative, the BLM would not approve the proposed facility and would not amend the California Desert Conservation Area (CDCA) Plan. As a result, no solar energy project would be constructed, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, no new structures or facilities would be constructed or operated on the site and no new ground disturbance would occur. As a result, air emissions would not be generated.

The results of the No Action Alternative would be the following:

- The impacts of the Proposed Action would not occur. However, the land on which the project is proposed would become available to other uses that are consistent with BLM's land use plan, including another renewable energy project.
- The benefits of the Proposed Action in reducing fossil fuel use and greenhouse gas emissions from gas-fired generation would not occur. Both State and Federal law support the increased use of renewable power generation.

If the Proposed Action is not approved, renewable projects would likely be developed on other sites in San Bernardino County, in other areas of California, or in adjacent states within the Desert Southwest as developers strive to provide renewable power that complies with utility requirements and State/Federal mandates. Several dozen solar and wind development applications for use of BLM land have been submitted for approximately one million acres of the CDCA. Additional BLM land in Nevada and Arizona also has applications for solar and wind projects.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under this alternative. Land uses associated with the Ivanpah DWMA would continue as they are today. Because this action would not have any associated air emissions, the No Action Alternative would not have any adverse impacts on air resources.

4.2.7.2 CEQA Significance Determinations

The less than significant impacts and significant impacts identified for the Proposed Action would not occur under Alternative 5. No adverse or significant impacts related to air quality would occur.

4.2.8 Alternative 6: No Project, Exclude Solar Alternative

4.2.8.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. As a result, no solar energy project would be constructed on the site, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Alternative 6 would leave the project site vacant and exclude the future development of the site as a solar facility. Because this alternative would not involve any construction, delivery, operations, maintenance, or decommissioning activities, air emissions would not be generated.

This alternative would prevent the project study area from being developed in the future as a solar facility. However, the project study area could be developed by a non-solar land use that is approved by BLM. Future development could result in air quality impacts; however, air quality impacts of future development would be analyzed in subsequent NEPA and/or CEQA environmental review.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would be modified under Alternative 6. Land uses associated with the Ivanpah DWMA would continue as they are today. Because this action would not have any associated air emissions, this alternative would not have any adverse impacts on air resources.

4.2.8.2 CEQA Significance Determinations

The less than significant impacts and significant impacts identified for the Proposed Action would not occur under Alternative 6. No impacts related to air quality would occur.

4.2.9 Alternative 7: No Project, Approve Solar Alternative

4.2.9.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The Stateline Solar Farm Project would not be constructed on the project site and the project site would remain vacant in the near-term. Under this alternative, the BLM would not approve the proposed facility, but would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the site.

If this were to occur, it is likely that the construction and operations of the future development could result in air quality impacts; however, air quality impacts of the future development would be analyzed in subsequent NEPA and/or CEQA environmental review.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 7. Land uses associated with the Ivanpah DWMA would continue as they are today. Because this action would not have any associated air emissions, this alternative would not have any adverse impacts on air resources.

4.2.9.2 CEQA Significance Determinations

The impacts identified for the Proposed Action would not occur under Alternative 7. No impacts related to air quality would occur.

4.2.10 Cumulative Impacts

4.2.10.1 Geographic Extent/Context

The geographic scope for air quality cumulative impacts is a six-mile radius for regionally based impacts and a one-mile radius for sensitive receptor impacts. These geographic scopes of analysis are appropriate for air quality due to the statewide, regional, and localized nature of air quality impacts that could occur cumulatively. In addition, because air emissions released from a source are diluted very rapidly, only projects that are scheduled concurrently in the same area as the Proposed Action are considered as projects that could contribute to cumulative impacts.

The identification of cumulative projects for air quality evaluation purposes is geographically limited (no more than 6 miles) because downwind dispersion reduces the cumulative impacts from project emissions to minimal levels after this distance. The emission sources for this project are all ground-based with minimal exhaust plume buoyancy, so the impacts from the project emissions would be highest at the project fence line and would decrease rapidly with distance. The California Energy Commission typically applies a six-mile radius for its air quality cumulative analyses for fossil-fuel fired power plant operating emissions, so this standard is considered conservative for this much cleaner renewable energy project.

For the emissions of any two or more projects to have the potential for significant cumulative downwind concentrations at any given fixed sensitive receptor location, they must both be in close proximity to limit the downwind dispersion from one site to the other; also, typically, one of

the projects must be able to cause an air quality standard exceedance on its own. Therefore, only projects within one mile of the Proposed Action are considered projects that could, together with the Proposed Action, cause significant cumulative impacts to the fixed sensitive receptor locations.

The cumulative localized air quality emission impacts from multiple sources are not always directly additive. This is because the relative locations of the sources, the distance between sources, and actual wind directions would reduce the time when emissions would cumulatively impact any single receptor location. Generally, these localized impacts are most likely to have significant additive effects when the emissions from one or more of the cumulative sources are singularly causing adverse localized impacts.

The regional air quality emissions impacts from cumulative projects should also consider the other regional efforts to improve air quality. In this case the regional area will benefit from the continued reduction in mobile source emissions due to ongoing federal and state on-road and off-road engine emission reduction and fuel improvement programs and alternative transportation initiatives, along with other efforts being undertaken by MDAQMD to meet state and federal air quality standards.

4.2.10.2 Existing Cumulative Conditions

Current area designations for criteria air pollutants represent the existing cumulative conditions for the project site area. The project site area within the Mojave Desert Air Basin (MDAB) is designated as moderate nonattainment for the state ozone standard, nonattainment for both the state and the federal PM_{10} standards, attainment for federal ozone standard, and attainment or unclassified for the state and federal CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and $PM_{2.5}$ standards. Table 3.2-2 summarizes the area's attainment status for various applicable state and federal standards.

4.2.10.3 Reasonably Foreseeable Projects

Tables 4.1-1 and 4.1-2 provide a list of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects, various BLM-authorized actions/activities, proposed or approved projects within the County's jurisdiction, and other actions/activities that the Lead Agency considers reasonably foreseeable. Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA or will do so prior to approval. The reasonably foreseeable projects that are located within the geographic area of effect for cumulative impacts are presented in Table 4.1-2 and listed below:

- Calnev Pipeline Expansion
- Molycorp Phoenix Project
- Joint Port of Entry
- Ivanpah Solar Electric Generating System
- Eldorado Ivanpah Transmission Project
- Southern Nevada Supplemental Airport
- First Solar Silver State Phase 2
- Desert Xpress

Calnev Pipeline Expansion. The Draft Calnev Pipeline Expansion Project Draft Environmental Impact Statement/ Environmental Impact Report (March 2012) provides estimated criteria pollutant emissions during construction and operation of the project. The estimated emissions are shown below in Tables 4.2-7 through 4.2-10.

Molycorp Phoenix Project. Emissions from the construction and operation of the Molycorp Phoenix Project were not available at the time that this EIS/EIR was prepared.

Joint Point of Entry (JPOE). An Environmental Assessment (EA) was prepared for the JPOE by the BLM. According to the qualitative analysis of air quality impacts included in the EA, the JPOE would not result in any significant operation impacts to air quality. The EA concluded that NO_x emissions during construction activities would exceed SCAQMD thresholds, thereby, resulting in a temporary adverse impact.

Ivanpah Solar Electric Generating System (Ivanpah SEGS). The estimated criteria pollutant emissions generated during construction and operation of the Ivanpah SEGS project are provided in the Final Environmental Impact Statement prepared for the project in July 2010. The estimated emissions are shown below in Tables 4.2-7 through 4.2-10.

Eldorado Ivanpah Transmission Project (EITP). The estimated criteria pollutant emissions generated during construction and operation of EITP project are provided in the Final Environmental Impact Statement prepared for the project in November 2010. The estimated emissions are shown below in Tables 4.2-7 through 4.2-10.

Southern Nevada Supplemental Airport. Emissions from the construction and operation of the Southern Nevada Supplemental Airport project were not available at the time that this EIS/EIR was prepared. The preparation of the EIS for the Southern Nevada Supplemental Airport has been suspended and it is currently unknown when the EIS will be available (FAA 2012).

First Solar Silver State Phase 2. The estimated criteria pollutant emissions generated during construction and operation of the entire First Solar Silver State project (Phases I, II and III) are provided in the Final Environmental Impact Statement prepared for the project in September 2010. The estimated emissions are shown below in Tables 4.2-7 through 4.2-10.

Desert Xpress. The estimated criteria pollutant emissions generated during construction and operation of the Desert Xpress project are provided in the Final Environmental Impact Statement prepared for the project in March 2011. The estimated emissions are shown below in Tables 4.2-7 through 4.2-10.

4.2.10.4 Cumulative Impacts Associated with Proposed Action

Construction

It is *unlikely that many of the* cumulative projects described above *would* be under construction at the same time as the Proposed Action or alternatives. In particular, expansion at Molycorp, construction of the Ivanpah SEGS facility and EITP*, and the Mountain Pass Lateral Project are effectively completed. The Southern Nevada Supplemental Airport Project is on indefinite hold, and there is no schedule for construction of the Desert Xpress project. Construction* of the Calnev Pipeline Expansion Project, and JPOE *may occur simultaneously, but would involve only minimal, short-term emissions in the vicinity of the Stateline project. The only project that may be simultaneous and result in emissions in the vicinity of the proposed Stateline project is the*

Silver State project. The Silver State project would have emissions of the same magnitude and duration as the Stateline project.

As a result of these concurrent construction projects, there would be multiple potential sources of emissions from onsite construction equipment, and increased truck and construction worker vehicle traffic in the area. Table 4.2-7 shows estimated maximum daily emissions generated during construction of the cumulative projects, including the Proposed Action, and Table 4.2-8 shows estimated annual construction emissions.

Table 4.2-7. Cumulative Daily Construction Emissions (pounds/day)

Project	CO	ROCs	NOx	SO_2	PM_{10}	$PM_{2.5}$
Calnev[1]	2,190	541	4,486	5.3	2,388	442
JPOE	n/a	n/a	n/a	n/a	n/a	n/a
First Solar Silver State Phase 2*	202	27	208	3	684	38
Proposed Action	*308*	*51*	*368*	*1*	*556*	*64*
Total	***2,700***	***619***	***5,062***	***9.3***	***3,628***	***544***
MDAQMD Thresholds	548	137	137	137	82	82
Cumulative Emissions Exceed Threshold?	**YES**	**YES**	**YES**	**NO**	**YES**	**YES**
Contribution of Proposed Action to Cumulative Total	***11.4%***	***37.2%***	***7.2%***	***10.7%***	***15.3%***	***11.7%***

1 – Calnev emissions would occur over a pipeline length of 234 miles. Emissions in the vicinity of the Stateline project would be a fraction of this, and would only occur for a few weeks during construction.

Table 4.2-8. Cumulative Annual Construction Emissions (tons/year)

Project	CO	ROCs	NOx	SOx	PM10	PM2.5
Calnev	136	34	278	0.32	159	28
JPOE	n/a	n/a	n/a	n/a	n/a	n/a
First Solar Silver State Phase 2*	37	4.9	38	<1	125	17
Proposed Action	*27*	*5*	*34*	*0*	*40*	*5*
Total	***200***	***43.9***	***350***	**0.32**	***324***	***50***
MDAQMD Thresholds	100	25	25	25	15	15
Exceeds Threshold?	**YES**	**YES**	**YES**	**NO**	**YES**	**YES**
De Minimis Levels	N/A	N/A	N/A	N/A	100	N/A
Exceeds Level?	**N/A**	**N/A**	**N/A**	**N/A**	**YES**	**NO**
Contribution of Proposed Action to Cumulative Total	***13.5%***	***11.4%***	***9.7%***	**0%**	***12.3%***	***10.0%***

*Annual construction emissions not provided in EIS. Calculated by multiplying maximum daily emissions by 365 days. Therefore, these annual emissions represent a conservative estimate as maximum daily emissions would not occur for an entire year.

As shown in Table 4.2-7, emissions from the concurrent construction of projects would exceed daily thresholds for all criteria pollutants, except SO_x. The contribution of the Proposed Action to cumulative daily construction emissions would range from approximately *10* percent for CO to *13.5* percent for PM_{10}. The Proposed Action would not be the largest source for any of the six pollutants.

As shown in Table 4.2-8, emissions from the concurrent construction of projects would exceed annual thresholds for all criteria pollutants, except SO_x. Annual cumulative construction emissions would also exceed the federal de minimis level for PM_{10}. However, the contribution of the Proposed Action to the cumulative annual emissions would be minimal.

Operation and Maintenance

The proposed solar project would start full operation as early as 2016. Operation of the Proposed Action or alternatives would not have any major stationary emission sources, and would only require minor maintenance activities and vehicles trips for operation/maintenance. As previously discussed, operation emissions of the Proposed Action and alternatives would not

result in adverse impacts to air quality. It is expected that all of the cumulative projects described above would be operational at the same time as the Proposed Action or alternatives. Operation of the cumulative projects, in combination with the Proposed Action or alternative, would cause a minor increase in traffic along local roadways, including I-15. Traffic trips and stationary sources from cumulative projects would increase criteria pollutant emissions in the project area. Tables 4.2-9 and 4.2-10 show estimated daily and annual operation emissions from cumulative projects. It should be noted that the proposed Desert Xpress railway would result in a net decrease in vehicle trips along the I-15 corridor, which would decrease vehicle emissions over current conditions. However, in order to provide a conservative estimate of operation emissions from cumulative projects, the decrease in vehicle trips emissions that would result from operation of the Desert Xpress is not included.

Table 4.2-9. Cumulative Daily Operation Emissions

Project	CO	ROCs	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Calnev*	0	0	0	0	0	0
Molycorp Phoenix	n/a	n/a	n/a	n/a	n/a	n/a
JPOE	n/a	n/a	n/a	n/a	n/a	n/a
ISEGS	228	33	161	10	154	57
EITP[1]	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*
So. NV Supplemental Airport	n/a	n/a	n/a	n/a	n/a	n/a
First Solar Silver State Phase 2**	5	n/a	2	0	12	1
Desert Xpress**	115	5.5	646	66	22	22
*Proposed Action***	*1*	*<1*	*<1*	*0*	*0*	*0*
Total	**350**	**39**	**810**	**76**	**188**	**80**
MDAQMD Thresholds	548	137	137	137	82	82
Exceeds Threshold?	**NO**	**NO**	**YES**	**NO**	**YES**	**NO**
Contribution of Proposed Action to Cumulative Total	**0.3%**	**<2.5%**	**<0.01%**	**0%**	**0%**	**0%**

* Operational and maintenance emissions of air criteria pollutants are not expected to increase over current levels
** These maximum daily operation emissions were calculated by dividing annual operation emissions by 365 and converting tons to pounds.
ROC = reactive organic compound
[1] Final EIR/EIS for EITP states that operation emissions would be negligible and does not provide estimates of emissions from operation.

Table 4.2-10. Cumulative Annual Operation Emissions

Project	CO	ROCs	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Calnev*	0	0	0	0	0	0
Molycorp Phoenix	n/a	n/a	n/a	n/a	n/a	n/a
JPOE	n/a	n/a	n/a	n/a	n/a	n/a
ISEGS	33	6	15	2	21	9
EITP[1]	0	0	0	0	0	0
So. NV Supplemental Airport	n/a	n/a	n/a	n/a	n/a	n/a
First Solar Silver State Phase 2	1	n/a	<1	<1	2	<1
Desert Xpress[2]	21	1	118	12	4	4
Proposed Action	*<1*	*<1*	*<1*	*0.0*	*0.0*	*0.0*
Total	**55**	**7**	**134**	**14**	**27**	**13**
MDAQMD Thresholds	100	25	25	25	15	15
Exceeds Threshold?	**NO**	**NO**	**YES**	**NO**	**YES**	**NO**
De Minimis Levels	N/A	N/A	N/A	N/A	100	N/A
Exceeds Level?	**N/A**	**N/A**	**N/A**	**N/A**	**NO**	**N/A**
Contribution of Proposed Action to Cumulative Total	**<1.8%**	**<14.3%**	**<0.7%**	**0%**	**0%**	**0%**

* Operational and maintenance emissions of air criteria pollutants are not expected to increase over current levels
ROC = reactive organic compound
[1] Final EIR/EIS for EITP states that operation emissions would be negligible and does not provide estimates of emissions from operation.
[2] According to the FEIS, this project would result in a net decrease in vehicle trips along the I-15 corridor, which would decrease vehicle emissions over current conditions. The decrease in vehicle trip emissions that would result from operation of the Desert Xpress is not included in order to provide a conservative estimate of operation emissions from cumulative project.

As shown in Table 4.2-9, emissions from the concurrent operation of cumulative projects would exceed daily thresholds for NO_x and PM_{10}. The contribution of the Proposed Action to cumulative daily operation emissions for NO_x and PM_{10} would be minimal.

As shown in Table 4.2-10, emissions from the concurrent operation of cumulative projects would exceed annual thresholds for NO_x and PM_{10}. Annual cumulative operations emissions would not exceed the federal de minimis level for PM_{10}. The contribution of the Proposed Action to the cumulative annual emissions for NO_x and PM_{10} would be minimal.

Decommissioning

The magnitude of decommissioning emissions are expected to be significantly less than those estimated for project construction since decommissioning would occur after at least 30 years of operation, and it is expected that on-road and off-road equipment engine technology would be far more advanced and cleaner than is currently the case. Additionally, the level of activity needed to decommission the facility is less than the level of activity needed to construct the facility. Nonetheless, emissions generated during decommissioning are estimated to exceed MDAQMD daily thresholds for PM_{10} and NO_x. Emissions generated by decommissioning of the Proposed Action and alternatives would occur within the context of the operations of the other reasonably foreseeable projects, including the Ivanpah SEGS, Molycorp Phoenix, and other projects that are currently unforeseen. As discussed above, it is expected that operation of these projects would contribute to cumulatively significant air quality impacts. The contribution of the Proposed Action or alternatives to these impacts would be unavoidable, but would be temporary.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the existing Ivanpah DWMA would not create air emissions, and would therefore not contribute to cumulative air quality impacts.

4.2.10.5 CEQA Significance Determinations

Significance conclusions for the cumulative impacts identified for each phase of the project (Construction, Operation and Maintenance, and Decommissioning) are presented below, based on the CEQA Significance Criteria presented Section 4.2.2.

AR-1

Construction

As concluded above, the Proposed Action and alternatives would not conflict with or obstruct implementation of the applicable air quality plan. The concurrent construction of cumulative projects would generate air emissions; however such emissions would be temporary and would cease upon the completion of construction activities. Therefore, cumulative impacts would be less than significant.

Operation and Maintenance

Neither operation of the Proposed Action nor the cumulative projects would conflict with or obstruct implementation of the applicable air quality plan. Therefore, the cumulative impacts would be less than significant.

Decommissioning

It is assumed that the decommissioning activities and any cumulative projects will be approved in a manner that would conform to the requirements of applicable air quality plans, if any exist, at the time of project decommissioning. Therefore, less than significant impacts are expected.

AR-2

Construction

The proposed Stateline facility would have significant and unavoidable NO_x and PM_{10} impacts during construction, and the addition of emissions from the construction of other cumulative projects would only worsen the air quality impacts. The concurrent construction of projects would exceed daily thresholds for all criteria pollutants, except SO_x. The cumulative NO_x and PM_{10} impacts would be significant and unavoidable, and the contribution of the proposed Stateline facility to these impacts would be cumulatively considerable.

Operation and Maintenance

As shown in Table 4.2-6, operation emissions for all criteria pollutants would remain well under the applicable thresholds of significance. Such levels of emissions would not cause localized exceedances, or contribute significantly to existing exceedances, of the State or federal air quality standards. Therefore, the Proposed Action would have a less than significant impact on air quality standard attainment during operation.

Decommissioning

As described above in Section 4.2.3.1, decommissioning of the project would have lower emissions than that of the project construction; however, it is assumed that NO_x and PM_{10} emissions would exceed MDAQMD thresholds. Emissions generated by decommissioning of the Proposed Action and alternatives would occur within the context of the operations of the other reasonably foreseeable projects, which were determined to have significant NO_x and PM_{10} emissions. Therefore, NO_x and PM_{10} emissions generated during decommissioning of the Proposed Action would have a cumulatively considerable air quality impact.

AR-3

Construction

Construction of the Proposed Action or alternatives would exceed the MDAQMD CEQA significance thresholds for PM_{10}, and the addition of emission from cumulative projects would only increase those exceedances. Therefore, the project's construction emissions would result in cumulatively considerable net increases of nonattainment pollutants (PM_{10}) and would have significant and unavoidable impact to regional air quality during construction activities; however, the significant impact would cease upon completion of construction activities.

Operation and Maintenance

As noted above, the sum of operational emissions from the cumulative projects would exceed MDAQMD daily and annual thresholds for NO_x and PM_{10}, thereby, resulting in a significant and unavoidable cumulative impact. However, because the operation emissions of the Proposed Action and alternatives would not exceed significance thresholds, the contribution of the Proposed Action would not be cumulatively considerable.

Decommissioning

Decommissioning of the Proposed Action or alternatives would exceed the MDAQMD CEQA significance thresholds for PM_{10}. Decommissioning of the Proposed Action or alternatives would occur when other cumulative projects are operational. Cumulative operational PM_{10} emissions would exceed thresholds. Therefore, the project's decommissioning emissions would result in cumulatively considerable net increases of nonattainment pollutants (PM_{10}) and would have significant and unavoidable impact to regional air quality during construction activities; however, the significant impact would cease upon decommissioning of construction activities.

AR-4

Construction

It is anticipated that the Proposed Action or alternatives would periodically generate a high level of localized NO_x and PM_{10} emissions and the overlapping construction activities of the two identified cumulative projects would only increase the potential for localized air quality impacts. Therefore, there would be significant and unavoidable cumulative construction impacts to the local residents and other local public receptors.

Operation and Maintenance

Operation emissions of the Proposed Action or alternatives alone would not exceed significance thresholds; however, the sum of operational emissions from the cumulative projects would exceed MDAQMD daily and annual thresholds for NO_x and PM_{10}. Therefore, it is assumed that there would be significant cumulative impacts to area receptors during operation of the Proposed Action, but the Proposed Action's contribution to the cumulative impact would not be cumulatively considerable.

Decommissioning

Decommissioning of the Proposed Action or alternatives would exceed the MDAQMD CEQA significance thresholds for PM_{10} and NO_x. Operation of cumulative projects would also exceed the significance thresholds for PM_{10} and NO_x. Therefore, it is assumed that there would be significant and unavoidable cumulative impacts to area receptors during decommissioning of the Proposed Action. However, the significant impact would cease upon decommissioning of construction activities.

AR-5

Construction

The Proposed Action, in combination with other cumulative projects would have less than significant odor impacts. Therefore, the cumulative odor impacts during construction of the Proposed Action and alternatives would be less than significant.

Operation and Maintenance

The Proposed Action, along with cumulative projects, would have less than significant odor impacts. Therefore, the cumulative odor impacts during operation of the Proposed Action would be less than significant.

Decommissioning

The Proposed Action, as well as the other cumulative projects, would have less than significant odor impacts. Therefore, the cumulative odor impacts during decommissioning of the Proposed Action would be less than significant.

Alternatives

Alternative 2: 2,385 Ac Alternative

The air quality impacts associated with Alternative 2 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with Alternative 2 would be the same as those described above for the Proposed Action.

Revised Alternative 3: ***1,685*** Ac Alternative

The air quality impacts associated with Revised Alternative 3 would be reduced as compared to those associated with the Proposed Action, due to the smaller project size and shorter duration of construction and decommissioning. Therefore, the cumulative impacts associated with Revised Alternative 3 would be lower than those described above for the Proposed Action.

Alternative 4: Reduced Acreage Alternative

The air quality impacts associated with Alternative 4 would be reduced as compared to those associated with the Proposed Action, due to the smaller project size and shorter duration of construction and decommissioning. Therefore, the cumulative impacts associated with Alternative 4 would be lower than those described above for the Proposed Action.

Alternative 5: No Action Alternative

Alternative 5, the No Action Alternative, would not contribute to air quality impacts. Therefore, this alternative would not contribute to cumulative air quality impacts.

Alternative 6: No Project, Exclude Solar Alternative

By denying the solar energy application and excluding the site from future solar energy development, Alternative 6 would not contribute to cumulative air quality impacts.

Alternative 7: No Project, Approve Solar Alternative

By denying the solar energy application and excluding the site from future solar energy development, Alternative 7 would not contribute to cumulative air quality. The site could potentially be used for solar or other development in the future. Air quality impacts associated with future actions would be considered in a later project-specific environmental analysis.

4.2.11 Mitigation Measures

Air quality impacts would be reduced by implementation of the following mitigation measures. Even with mitigation, NO_x and PM_{10} emissions during construction and decommissioning are likely to remain significant and unavoidable under CEQA, but for a short duration. These impacts would also be considered to be residual effects under NEPA.

MM-Air-1: Air Quality Construction Management Plan. The Applicant shall implement their Air Quality Construction Management Plan (First Solar 2012c) that describes the fugitive dust control measures that would be implemented and monitored at all locations of proposed facility construction. This plan shall comply with the mitigation measures described in the Fugitive Dust Control Rules enforced by MDAQMD (Rule 403.2), as well as the existing SIP available for PM_{10} and $PM_{2.5}$, and the BLM Fugitive Dust/PM_{10} Emissions Control Strategy for the Mojave Desert Planning Area. The plan shall be submitted to MDAQMD no less than 60 days prior to the start of construction. The plan shall be incorporated into all contracts and contract specifications for construction work. The plan shall outline the steps to be taken to minimize fugitive dust generated by construction activities by:

- Describing each active operation that may result in the generation of fugitive dust;
- Identifying all sources of fugitive dust, e.g., earth moving, storage piles, vehicular traffic;
- Describing the control measures to be applied to each of the sources identified. The descriptions shall be sufficiently detailed to demonstrate that the best available control measures required by the air quality districts for linear projects are used; and
- Providing the following control measures, in addition to or as listed in the applicable rules but not limited to:
  - Frequent watering or stabilization of excavation, spoils, access roads, storage piles, and other sources of fugitive dust (parking areas, staging areas, other) if construction activity cause persistent visible emissions of fugitive dust beyond the work area;
  - Use of street sweeping and trackout devices at the construction site. Sweep streets daily (with water sweepers) if visible soil material is carried into adjacent public streets or wash trucks and equipment before entering public streets;
  - Apply chemical soil stabilizers or apply water to form and maintain a crust on inactive construction areas (disturbed lands that are unused for four consecutive days);
  - Cover stockpiles and suspend construction work when winds exceed 30 miles per hour;
  - Pre-watering of soils prior to clearing and trenching;
  - Pre-moisten, prior to transport, import and export dirt, sand, or loose materials;
  - Installing temporary coverings on storage piles when not in use. Cover loads in haul trucks or maintain at least six inches of free-board when traveling on public roads;
  - Dedicating water truck or high/capacity hose to any soil screening operations;
  - Minimizing drop height of material through screening equipment;
  - Reducing the amount of disturbed area where possible; and
  - Planting vegetative ground cover in disturbed areas as soon as possible following construction activities.

The Applicant or its designated representative shall obtain prior approval from the MDAQMD prior to any deviations from fugitive dust control measures specified in the Air Quality Construction Management Plan. A justification statement used to explain the technical and safety reason(s) that preclude the use of required fugitive dust control measures shall be submitted to the appropriate agency for review.

The provisions of the Air Quality Construction Management Plan shall also apply to project decommissioning activities.

MM-Air-2: Construction Emissions Reduction. The Applicant shall implement the following measures to reduce emissions during construction:

- All off-road diesel-powered construction equipment with a rating greater than 50 horsepower shall utilize engines compliant with U.S. Environmental Protection Agency (EPA) Tier 3 or higher non-road engine standards*, where available*. In addition, all retrofitted construction equipment shall be outfitted with Best Available Control Technology devices certified by the California Air Resources Board (CARB). Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 2 or Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations;
- As feasible, reduce emissions of particulate matter and other pollutants by using alternative clean fuel technology such as electric, hydrogen fuel cells, and propane-powered equipment or compressed natural gas-powered equipment with oxidation catalysts instead of gasoline- or diesel-powered engines;
- Ensure that all construction equipment is properly tuned and maintained and shut off when not in direct use;
- Prohibit engine tampering to increase horsepower;
- Locate engines, motors, and equipment as far as possible from residential areas and at least 300 feet from sensitive receptors, such as schools, daycare centers, and hospitals;
- Provide carpool shuttles and vans to transport construction workers to and from construction sites, thus eliminating some private vehicle trips;
- Arrange for food catering trucks to visit the Proposed Action twice a day*, if commercially available*;
- Reduce construction-related trips of workers and equipment, including trucks;
- Require that on-road vehicles be less than 10 years old.

The Applicant shall also consult with the MDAQMD to identify other potential control measures not identified above. The Applicant or its designated representative shall submit a plan specifying these *additional* measures and related construction contract specifications to the agencies involved in the environmental review and permitting process for the proposed facility, to the extent applicable under rules and regulations (BLM, EPA, MDAQMD), prior to construction activities.

The Applicant shall prepare and maintain documentation that demonstrates implementation of the proposed emission reduction measures and required mitigation measures. The following documents and/or files shall be submitted to the agencies involved in the environmental review and permitting process for the proposed facility:

- Inventory of all equipment used during each construction activity. At a minimum, this inventory shall include an equipment description, equipment identification, identification of type of engine(s), and engine emission data; and
- *The CARB Diesel Off-Road On-line Reporting System (DOORS) for registration shall be used to certify conformance with the tiered engine certification.*

MM-Air-3: Operations Emissions Reduction. The Applicant shall implement the following measures to reduce emissions during operations and maintenance activities:

- The Applicant shall control fugitive dust from the unpaved roads on the site during operation using the following methods;

- The main access road for employees and deliveries to the maintenance complex shall be paved as early during construction as practical;
- The other unpaved roads at the site shall be stabilized using water or soil stabilizers so that vehicle travel on these roads does not cause visible dust plumes;
- Traffic speeds on unpaved roads shall be limited to no more than 15 miles per hour. Traffic speed signs shall be displayed prominently at all site entrances and at egress point(s) from the central maintenance complex;
- All on-site off-road equipment and on-road vehicles for operation/maintenance shall be new equipment that meets the recent California Air Resources Board engine emission standards or alternatively fueled construction equipment, such as compressed natural gas, liquefied natural gas, or electric, as appropriate;
- All equipment shall be turned off when not in use. Engine idling of all equipment shall be minimized; and
- All equipment engines shall be maintained in good operating condition and in proposed tune per manufacturers' specification.

Mitigation measures MM-Air-1 and MM-Air-2 would reduce Particulate Matter and Nitrogen Oxides emissions, respectively, during construction to the maximum extent feasible. The Applicant has proposed soil stabilizers (ChlorTex Road Binder, Eccotex Soil Binder, or PlasTex Soil Stabilizer) for the Proposed Action, but BLM may require other soil binders that are equivalent. Implementation of mitigation measure MM-Air-1 is expected to reduce fugitive dust emissions by 50 to 85 percent, or more, depending on the emissions source and the related emission control measure. Specifically, proper use of soil binders can reduce fugitive dust from unpaved road travel, the single largest project source of construction fugitive dust emissions, by 85 percent or more. Implementation of mitigation measure MM-Air-2 could reduce NO_x, VOC, and particulate matter (PM) emissions from the off-road equipment by as much as 78 percent, 91 percent, and 73 percent, respectively, when compared to old uncontrolled equipment that predates the EPA Non-road Diesel Engine Emission Standards for off-road equipment. Specific emission reductions based on comparison with lower Tier levels vary by and equipment size range and the specific Tier to Tier level comparison, but range from 28 to 85 percent depending on pollutant (with the exception of PM where there is not additional control between Tier 2 and Tier 3) when compared to the MM-Air-2 required Tier 3 level.

Mitigation measure MM-Air-3 would reduce Particulate Matter and Nitrogen Oxides emissions during operation, and would also reduce NO_x emissions in a reasonable manner for this ozone non-attainment area. Implementation of mitigation measure MM-Air-3 is expected to reduce fugitive dust emissions by 85 percent, or more, depending on the emissions source and the related emission control measure. Specifically, paving should reduce fugitive dust emissions by over 95 percent versus controlled unpaved roads, and the proper use of soil binders can reduce fugitive dust from unpaved road travel, the single largest project source of operation fugitive dust emissions, by 85 percent or more. Mitigation measure MM-Air-3 also could reduce NO_x, VOC, and PM emissions from the dedicated on-site off-road and on-road equipment by amounts similar to those described above for mitigation measure MM-Air-2.

Mitigation measures MM-Air-1 and MM-Air-3 would have secondary impacts from the equipment and travel trips necessary to implement all of the fugitive dust control measures contained in these two conditions. For example the use of water for dust control would cause truck exhaust emissions. However, fugitive dust control using water or soil binders is required by MDAQMD rules and regulations, so the specific provisions requiring the use of soil binders rather than water, which would reduce the application frequency and overall water consumption by orders of magnitude, would reduce the impacts from water use and water trucking. The equipment

exhaust provisions of mitigation measures MM-Air-2 and MM-Air-3 would not cause any new, or affect any existing, environmental impacts.

Although implementation of MM-Air-1, MM-Air-2, and MM-Air-3 would reduce the level of significant impacts from construction and decommissioning of the Proposed Action, NO_x and PM_{10} emissions would still exceed MDAQMD significance thresholds. Such exceedances would be significant impacts under CEQA, and would represent a residual impact under NEPA.

4.2.12 Residual Impacts After Mitigation

The Proposed Action or alternatives would have temporary and unavoidable adverse NO_x and PM_{10} impacts during construction and decommissioning. However, the project would not cause emission rates that could exceed the applicable General Conformity de minimis thresholds (40 CFR 93.153) during construction, decommissioning or operation, so a formal conformity analysis and determination are not required for this project. Unlike construction and decommissioning, project operation would not have any adverse impacts since the operation/maintenance activities required for the Proposed Action are minimal. For all other criteria pollutants, the impacts would not be substantial during construction, decommissioning or operation. Mitigation measures MM-Air-1 through MM-Air-3 would mitigate NO_x and particulate matter emissions during construction decommissioning to the maximum extent feasible.

4.3 Climate Change

4.3.1 Methodology for Analysis

This section addresses the impacts of greenhouse gas (GHG) emissions from the proposed Stateline Solar Farm project, as well as the consistency of the Proposed Action with the applicable plans and programs that have been implemented by various Federal and State agencies with jurisdiction over the project area. Potential GHG emissions from construction and operation, including operation emissions reductions from fossil-fuel fired electricity generation displacement, are estimated quantitatively to evaluate the Proposed Action and alternatives. Climate change impacts are long-term, global, and cumulative in nature. Therefore, the GHG emissions impacts described in this section also analyze the potential for long-term cumulative impacts.

The CEQ issued draft guidance to federal agencies on February 18, 2010, regarding GHG emissions. The guidance states that in an agency's analysis of direct effects of GHG emissions, it would be appropriate to quantify cumulative emissions over the life of the project; discuss measures to reduce emissions, including consideration of reasonable alternatives; and qualitatively discuss the link between such emissions and climate change. In this guidance, the CEQ recommends that if a proposed action would be reasonably anticipated to cause direct emissions of 25,000 metric tons or more of carbon dioxide equivalents (CO_2e) GHG emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public. The guidance also states that it is not currently useful for the NEPA analysis to attempt to link specific climatological changes to a particular project or emissions as direct linkage is difficult to isolate and to understand *on a project-specific basis. While the CEQ draft guidance is not applicable to Federal land management actions, the BLM notes these general principles to inform its discussion of GHG emissions and climate change.*

4.3.2 CEQA Significance Criteria

The indicators listed below were used to determine whether the proposed facility's GHG emissions would be significant under CEQA. These indicators are based on the significance criteria for air quality listed in the CEQA Environmental Checklist, Appendix G of the CEQA Guidelines. Under CEQA, the proposed solar farm would have a significant impact on climate change if it would:

- CC-1: Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.
- CC-2: Conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

The CARB published interim significance thresholds for GHG in 2008. The thresholds consist of the performance standards and a quantitative threshold of 7,000 metric tons of carbon dioxide equivalent emissions per year (MT CO_2e/year) from non-transportation related GHG sources, which include combustion-related components/equipment, process losses, purchased electricity, and water usage and wastewater discharge (CARB 2008).

4.3.3 Alternative 1: Proposed Action

4.3.3.1 GHG Emission Impacts

The proposed Stateline Solar Farm facility would generate direct GHG emissions during construction and operation. Direct GHG emissions during construction would be generated from use of off-road equipment (such as graders, cranes, and excavators) and from on-road

construction vehicle trips (such as heavy haul trips for construction materials, as well as construction employee commuting). As a solar photovoltaic (PV) project, the Proposed Action would have no primary direct CO_2 emissions from electricity production during operation, but GHG emissions during operation would result from the use of off-road equipment and on-road vehicles used for inspection and maintenance *of the Project*. Breakers containing sulfur hexafluoride (SF_6) would be used, but they would be sealed, and would not be expected to release SF_6. The Proposed Action is likely to result in a large reduction in GHG emissions due to the displacement of electricity generated by fossil fuel-fired power plants, offset by a small increase in GHG emissions due to the loss of carbon uptake from the removal of vegetation.

Construction

The estimated direct construction GHG emissions for the Proposed Action, including the secondary direct emissions from offsite construction trips, are presented in Table 4.3-1. *The table also presents these construction-phase emissions averaged over the 30 year life of the project, in order to support the analysis of net annual GHG emissions from the Project in Table 4.3-2.*

Table 4.3-1. Total Construction Period CO_2 Emissions for Proposed Action

	$MTCO_{2e}$
Total	7,484
Total Construction Emissions Amortized over 30-year Project Life	249 $MTCO_{2e}$/year

Operation and Maintenance

The estimated direct operation GHG emissions related to the Proposed Action, including the emissions from employee and delivery traffic trips, other maintenance and operation activities, and the emergency generator, are presented in Table 4.3-2. Also presented in this table is the project life amortized construction and decommissioning GHG emissions and an estimate of the GHG emissions displaced from the project's electrical production.

Table 4.3-2. Annual Operation Emissions for Proposed Action

Source	$MTCO_{2e}$/year
Total Annual Operations Emissions	2,100
Amortized Construction Emissions	249
Amortized Decommissioning Emissions	249
Total Annualized Emissions	2,598
Reduced uptake from vegetation removal	2,994
Displaced Annual GHG Emissions	-294,728
Net Project Annual GHG Emissions	-286,538

Assuming a generating capacity of 300 MW, an annual capacity factor of 34 percent, and a system-wide GHG emission factor of 727.2 pounds CO_2e per MWh for electricity provided by California utilities (EPA 2011), the energy produced by the project would displace approximately 294,728 $MTCO_2$e/year that would otherwise be emitted by fossil fuel-fired power plants. This is more than enough, by orders of magnitude, to offset the project's construction and operation GHG emissions, so the Proposed Action would have negative net GHG emissions. However, the exact nature and location of such reductions is not known, and they would drop over time as California utilities change their generation profile over time as necessary to comply with State regulations. Regardless, this renewable energy project would provide a net reduction in GHG emissions for the electricity generating sector.

The Proposed Action would require the clearing of land and removal of vegetation, which would reduce the ongoing natural carbon uptake by vegetation. A study of the Mojave Desert indicated that the desert may uptake carbon in amounts as high as 100 grams per square meter per year (Wohlfahrt and others 2008). This would equate to a maximum reduction in carbon uptake, calculated as carbon dioxide (CO_2), of 1.48 MT tons of CO_2 per acre per year for areas with complete vegetation removal. For this Proposed Action, which would require approximately 2,023 acres of disturbed areas of vegetation removal, the equivalent loss in carbon uptake would be 2,994 MTCO2e/year, which would correspond to 0.00335 $MTCO_{2e}$/MWh generated (7.4 pounds [lbs]/MWh). Therefore, the natural carbon uptake loss would be negligible in comparison to the reduction of 727.2 lbs/MWh in fossil fuel CO_2 emissions.

Decommissioning

Decommissioning of the Proposed Action would require removal of the PV arrays and electrical collection system and transporting all components off site. After removal of equipment and facilities, the site would need to be re-vegetated. Equipment used for decommissioning would generally be similar to that used for construction, but the overall activity necessary during decommissioning would be much less than that of construction. Since decommissioning would occur after at least 30 years of operation, it is likely that equipment engine technology would be more advanced and fuels would be cleaner. Therefore, it is anticipated that GHG emissions generated from decommissioning would be equal to, or more likely less than, those from construction that are estimated above.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the existing Ivanpah DWMA would not result in any net additions or reductions to GHG emissions.

4.3.3.2 CEQA Significance Determinations

Evaluation of CEQA significance for GHG/Climate Change, which is both a long-term and global impact, is based on the effects of the entire project from construction through decommissioning.

CC-1

The proposed facility would emit an annualized average of 2,598 $MTCO_{2e}$/year as presented in Table 4.3-2 above. These direct GHG emissions are well below the interim draft CARB significance threshold of 7,000 MT CO_2e/year for industrial projects, not including the emission reductions from the electrical sector that would be enabled by the project's operation. The project as a whole would enable GHG emission reductions within the electricity generation sector; therefore, the impacts of the proposed solar farm would not only be less than significant, but *would be* beneficial.

CC-2

As a solar power project, the project would fulfill a portion of the renewable portfolio that is mandated for California and reflected in the CARB Assembly Bill (AB32) Scoping Plan and the Governor's Executive Order S-14-08, partially satisfying the goals of the California Renewable Energy Programs. Additionally, the emission reductions enabled by this project would help reach the AB32 emission reduction goals for the electricity generation sector. Therefore, the

project would conform to applicable plans, policies, and regulations related to GHG emission reductions and would have less than significant impacts.

4.3.4 Alternative 2: 2,385 Ac Alternative

4.3.4.1 GHG Emission Impacts

Construction activities associated with Alternative 2 would be slightly greater than the Proposed Action due to the slightly increased acreage. The Solar Farm site, generation interconnection (gen-tie) corridor, and access corridor under Alternative 2 would require approximately 2,385 acres of land, which is 242 acres (or about 12 percent) more than the Proposed Action. Alternative 2 would utilize the same materials and equipment as the Proposed Action. Therefore, the intensity of construction-related traffic per day would be basically the same as in the Proposed Action. However, due to the larger project site under this alternative, the duration of construction-generated traffic may be incrementally longer.

Construction

The estimated direct construction GHG emissions for Alternative 2, including the secondary direct emissions from offsite construction trips, are presented in Table 4.3-3. The table also presents these construction-phase emissions averaged over the 30 year life of the project, in order to support the analysis of net annual GHG emissions from the Project in Table 4.3-4.

Table 4.3-3. Total Construction Period CO_2 Emissions for Alternative 2

	$MTCO_{2e}$
Total (Scaled from Proposed Action)	*8,382*
Total Construction Emissions Amortized over 30-year Project Life	*279 $MTCO_{2e}$/year*

Operation and Maintenance

The estimated direct operation GHG emissions related to Alternative 2, including the emissions from employee and delivery traffic trips, other maintenance and operation activities, and the emergency generator, are presented in Table 4.3-4. Also presented in this table is the project life amortized construction and decommissioning GHG emissions and an estimate of the GHG emissions displaced from the project's electrical production. Because Alternative 2 would involve the same number of PV arrays and generating capacity as the Proposed Action, it would result in the same annual GHG emissions as the Proposed Action.

Because Alternative 2 would require a different amount of clearing of land and removal of vegetation, the alternative would result in a greater amount of displacement of natural carbon uptake by vegetation. Alternative 2 would require approximately 2,362 ac of disturbed areas of vegetation removal, so the equivalent loss in carbon uptake would be 3,499 $MTCO_2e$/year, which would correspond to 0.0039 $MTCO_2e$/MWh generated (7.5 lbs/MWh). Therefore, the natural carbon uptake loss would be negligible in comparison to the reduction of 727.2 lbs/MWh in fossil fuel CO_2 emissions.

Table 4.3-4. Annual Operation Emissions for Alternative 2

Source	***$MTCO_{2e}$/year***
Total Annual Operations Emissions	*2,100*
Amortized Construction Emissions	*279*
Amortized Decommissioning Emissions	*279*
Total Annualized Emissions	*2,658*
Reduced uptake from vegetation removal	*3,499*
Displaced Annual GHG Emissions	*-294,728*
Net Project Annual GHG Emissions	*-285,913*

Decommissioning

Decommissioning of Alternative 2 would require the same types of activities and equipment as described for construction above. Because decommissioning would occur 30 years in the future, it is likely that equipment engine technology would be more advanced and fuel would be better, and therefore emissions are likely to be less than those estimated above.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be the same under Alternative 2 as Alternative 1. As discussed for the Proposed Action, modification of the boundary of the existing Ivanpah DWMA would not result in any net additions or reductions to GHG emissions.

4.3.4.2 CEQA Significance Determinations

While the GHG beneficial effects would be slightly reduced under Alternative 2, the CEQA significance determinations for Alternative 2 would be *the same as* those for the Proposed Action as described above.

4.3.5 *Revised* Alternative 3: *1,685* Ac Alternative

4.3.5.1 GHG Emission Impacts

Construction activities associated with Revised Alternative 3 would be the same as those of the Proposed Action, but would be of a smaller scale. The project site under Revised Alternative 3 is 1,685 ac, or about 458 ac (21 percent) smaller than the project site under the Proposed Action. Revised Alternative 3 would utilize the same materials and equipment as the Proposed Action. Therefore, the intensity of construction-related traffic per day would be approximately the same as in the Proposed Action, but the duration of construction-generated traffic would be shorter.

Construction

The estimated direct construction GHG emissions for Revised Alternative 3, including the secondary direct emissions from offsite construction trips, are presented in Table 4.3-5. The table also presents these construction-phase emissions averaged over the 30 year life of the project, in order to support the analysis of net annual GHG emissions from the Project in Table 4.3-6.

Table 4.3-5. Total Construction Period CO_2 Emissions for Revised Alternative 3

	$MTCO_{2e}$
Total (Scaled from Proposed Action)	*5,912*
Total Construction Emissions Amortized over 30-year Project Life	*197 $MTCO_{2e}$/year*

Operation and Maintenance

The estimated direct operation GHG emissions related to Revised Alternative 3, including the emissions from employee and delivery traffic trips, other maintenance and operation activities, and the emergency generator, are presented in Table 4.3-6. Also presented in this table is the project life amortized construction and decommissioning GHG emissions and an estimate of the GHG emissions displaced from the project's electrical production.

Because Revised Alternative 3 would involve the same number of PV arrays and generating capacity as the Proposed Action, it would result in the same annual GHG emissions as the Proposed Action.

Because Revised Alternative 3 would require a different amount of clearing of land and removal of vegetation, the alternative would result in a reduced amount of displacement of natural carbon uptake by vegetation. Revised Alternative 3 would require approximately 1,685 ac of disturbed areas of vegetation removal, so the equivalent loss in carbon uptake would be 2,493 $MTCO_2e$/year, which would correspond to 0.0028 $MTCO_2e$/MWh generated (7.7 lbs/MWh). Therefore, the natural carbon uptake loss would be negligible in comparison to the reduction of 727.2 lbs/MWh in fossil fuel CO_2 emissions.

Table 4.3-6. Annual Operation Emissions for Revised Alternative 3

Source	***$MTCO_{2e}$/year***
Total Annual Operations Emissions	*2,100*
Amortized Construction Emissions	*197*
Amortized Decommissioning Emissions	*197*
Total Annualized Emissions	*2,494*
Reduced uptake from vegetation removal	*2,493*
Displaced Annual GHG Emissions	*-294,728*
Net Project Annual GHG Emissions	*-287,247*

Decommissioning

Decommissioning of *Revised* Alternative 3 would require the same types of activities and equipment as described for construction above. Because decommissioning would occur 30 years in the future, it is likely that equipment engine technology would be more advanced and fuel would be better, and therefore emissions are likely to be less than those estimated above.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be the same under Alternative 3 as Alternative 1. As discussed for the Proposed Action, modification of the boundary of the existing Ivanpah DWMA would not result in any net additions or reductions to GHG emissions.

4.3.5.2 CEQA Significance Determinations

The GHG beneficial effects would be *similar* under *Revised* Alternative 3 as the Proposed Action, and *therefore* the CEQA significance determinations for *Revised* Alternative 3 would be *the same as* those for the Proposed Action as described above.

4.3.6 Alternative 4: Reduced Acreage Alternative

4.3.6.1 GHG Emission Impacts

Construction activities associated with Alternative 4 would be the same as those of the Proposed Action, but would be of a smaller scale. The project site under Alternative 4 is 1,766 ac, or about 377 ac (17 percent) smaller than the project site under the Proposed Action. Alternative 4 would utilize the same materials and equipment as the Proposed Action. Therefore, the intensity of construction-related traffic per day would be basically the same as in the Proposed Action, but the duration of construction-generated traffic would be shorter. In addition, due to the reduced power output (232 MW as compared to 300 MW for the Proposed Action), the beneficial GHG emission impacts would be reduced from those of the Proposed Action.

Construction

The estimated direct construction GHG emissions for Alternative 4, including the secondary direct emissions from offsite construction trips, are presented in Table 4.3-7. *The table also presents these construction-phase emissions averaged over the 30 year life of the project, in order to support the analysis of net annual GHG emissions from the Project in Table 4.3-4.*

Table 4.3-7. Total Construction Period CO_2 Emissions for Alternative 4

	MTCO2e
Total (scaled from Proposed Action)	6,212
Total Construction Emissions Amortized over 30-year Project Life	207 MTCO2e/year

Operation and Maintenance

The estimated direct operation GHG emissions related to Alternative 4, including the emissions from employee and delivery traffic trips, other maintenance and operation activities, and the emergency generator, are presented in Table 4.3-8. Also presented in this table is the project life amortized construction GHG emissions and an estimate of the GHG emissions displaced from the project's electrical production.

Table 4.3-8. Annual Operation Emissions for Alternative 4

Source	$MTCO_2e$/year
Total Annual Operations Emissions (scaled from Proposed Action)	1,743
Amortized Construction Emissions	207
Amortized Decommissioning Emissions	207
Total Annualized Emissions	2,157
Reduced uptake from vegetation removal	2,553
Displaced Annual GHG Emissions	-214,169
Net Project Annual GHG Emissions	-207,302

Because Alternative 4 would require a different amount of clearing of land and removal of vegetation, the alternative would result in a reduced amount of displacement of natural carbon uptake by vegetation. Alternative 4 would require approximately 1,725 ac of disturbed areas of vegetation removal, so the equivalent loss in carbon uptake would be 2,553 $MTCO_2e$/year, which would correspond to 0.0037 MTCO2e/MWh generated (8.2 lbs/MWh). Therefore, the natural carbon uptake loss would be negligible in comparison to the reduction of 727.2 lbs/MWh in fossil fuel CO_2 emissions.

Decommissioning

Decommissioning of Alternative 4 would require the same types of activities and equipment as described for construction above. Because decommissioning would occur 30 years in the future, it is likely that equipment engine technology would be more advanced and fuel would be better, and therefore emissions are likely to be less than those estimated above.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be the same under Alternative 4 as Alternative 1. As discussed for the Proposed Action, modification of the boundary of the existing Ivanpah DWMA would not result in any net additions or reductions to GHG emissions.

4.3.6.2 CEQA Significance Determinations

The GHG beneficial effects would be decreased under Alternative 4 *relative to the Proposed Project*, but the CEQA significance determinations for Alternative 4 would be identical to those for the Proposed Action as described above.

4.3.7 Alternative 5: No Action Alternative

4.3.7.1 GHG Emission Impacts

Under this alternative, the proposed solar farm would not be approved and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

The results of this alternative would be the following:

- The GHG emissions associated with the Proposed Action would not occur. However, the land on which the project is proposed would become available to other potential uses that are consistent with BLM's *CDCA* plan, including another renewable energy project. These additional uses could generate greater or lesser GHG emissions than the Proposed Action*, although all such emissions are speculative at this time*.
- The beneficial impacts of the Proposed Action in displacing fossil fuel-fired generation and reducing associated GHG emissions from gas-fired generation would not occur.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under this alternative. Land uses associated with the Ivanpah DWMA would continue as they are today. Because this

action would not have any associated GHG emissions, the No Action Alternative would have no impact on climate change.

4.3.7.2 CEQA Significance Determinations

Under this Alternative, the activities at the site are not expected to change noticeably from existing conditions. As such, this No Action Alternative would not result in direct GHG emission impacts generated by the Proposed Action nor would it result in the GHG emission benefits associated with the implementation of the Proposed Action.

4.3.8 Alternative 6: No Project, Exclude Solar Alternative

4.3.8.1 GHG Emission Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. As a result, no solar energy project would be constructed on the site, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because the CDCA Plan would be amended to make the area unavailable for future solar energy development, it is expected that the site would remain in its existing condition, with no new structures or facilities constructed or operated on the site.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be the same under Alternative 6 as Alternative 1. As discussed for the Proposed Action, modification of the boundary of the existing Ivanpah DWMA would not result in any net additions or reductions to GHG emissions.

4.3.8.2 CEQA Significance Determinations

Under Alternative 6, the activities at the site are not expected to change noticeably from existing conditions. As such, this No Action Alternative would not result in direct GHG emission impacts generated by the Proposed Action, nor would it result in the GHG emission benefits associated with the implementation of the Proposed Action.

4.3.9 Alternative 7: No Project, Approve Solar Alternative

4.3.9.1 GHG Emission Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The Stateline Solar Farm Project would not be constructed on the project site and the project site would remain vacant in the near-term. Under this alternative, the BLM would not approve the proposed facility, but would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the site *in the future; however, the impacts of such a future project are speculative at this time*.

Because the CDCA Plan would be amended *to find the site suitable for solar energy development*, it is possible that the site would be developed with the same or a different solar energy technology *in the future*. *While the* GHG emissions and impacts *and emission reduction benefits that might* result from the construction and operation of *such a future* solar energy

project would likely be similar to the GHG impacts from the Proposed Action*, those impacts and benefits are speculative at this time*. Different solar technologies require different amounts of construction and operations maintenance; however, the benefits of the Proposed Action in displacing fossil fuel fired generation and reducing associated GHG emissions could occur with a different solar energy technology at this site and therefore with this alternative.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified Alternative 7. Land uses associated with the Ivanpah DWMA would continue as they are today. *As noted above, there would be no change in GHG emissions as a result of a decision not to change the DWMA boundary.*

4.3.9.2 CEQA Significance Determinations

Under Alternative 7, the activities at the site are not expected to change noticeably from existing conditions. As such, this No Action Alternative would not result in direct GHG emission impacts generated by the Proposed Action, nor would it result in the GHG emission benefits associated with the implementation of the Proposed Action.

4.3.10 Cumulative Impacts

It is generally agreed within the scientific community that increases in global GHG emission concentration can cause changes to current global climate conditions. Global effects of GHG emissions and effects of climate change are a subject of study by many organizations, including the U.S. Global Climate Research Program (GCRP) and Intergovernment Panel on Climate Change (IPCC). The GCRP has provided valuable insights regarding the state of knowledge of climate change. The projected change in temperature from 'present day' (1993-2008) over the period encompassing the ROW (i.e., to the period of 2040 to 2059 in the GCRP report) in the vicinity of the site is an increase of between 1 to 3°F (GCRP 2009). Based on the assessments of the GCRP and the National Academy of Sciences' National Research Council, the EPA determined that potential changes in climate caused by GHG emissions endanger public health and welfare (EPA 2009, 74 FR 66496). The EPA indicated that, while ambient concentrations of GHGs do not cause direct adverse health effects (such as respiratory or toxic effects), public health risks and impacts can result indirectly from changes in climate.

Global emissions of GHGs were estimated by the IPCC Fourth Assessment Report (IPCC 2007). Worldwide GHG emissions increased between 1970 and 2004 by 70 percent, from 28.7 gogatonne (Gt) CO_{2e} to 49.0 Gt CO_{2e}. In the United States, GHG emissions in 2010 totaled 6.8 million metric tons CO_{2e}. In contract, the contribution of the Proposed Action to this total would be 2,598 MT CO_{2e}. This amount is 0.04 percent of the total United States annual emission.

Climate change impacts could include changes to the local climate at the project site. The specific nature of any localized climate change cannot be reasonably predicted *or associated with specific activities or projects,* but could include increases or decreases in temperature and rainfall, the increase in severe weather events, or otherwise cause changes to the local climatology that could be disruptive to the existing flora and fauna, could increase surface soil loss, and could increase or decrease agricultural productivity. It is expected that warmer temperatures would affect the ecology and habitats in the area. Plants and wildlife adapted to lower (warmer) elevations close to Ivanpah Dry Lake would potentially find higher elevations on the alluvial fan near the base of the Clark Mountains to be suitable habitat. Similar migrations of habitat may occur within the mountains themselves. Some species that are currently located at

the highest elevations, such as bighorn sheep, may eventually be eliminated from their former range altogether. GHG emissions from the proposed actions of the solar facility and modified DWMA would not have a direct impact on these local ecological changes.

Moreover, this entire GHG impact assessment is a cumulative impact assessment; there are no direct localized impacts from project-level GHG emissions. The proposed Stateline facility alone, or any of the project alternatives, would not be sufficient to effect global climate change, but the Proposed Action and alternative would emit GHGs and, therefore, have been analyzed as a source of potential cumulative impacts in the context of long term global impacts and existing GHG regulatory requirements and GHG energy policies. However, the broad integration of renewable energy would allow for a sizable reduction in current GHG emission rates and could have long-term beneficial impacts in relation to climate change. Specifically, the proposed Stateline facility would enable GHG emission reductions, and so has been found to provide beneficial cumulative GHG impacts.

4.3.11 Mitigation Measures

The proposed solar farm would result in *a net reduction in* GHG emissions would *therefore* be beneficial *from a* climate change *perspective*, so no climate change/GHG emissions mitigation measures are recommended.

4.3.12 Residual Impacts After Mitigation

No climate change or GHG emissions mitigation is recommended, as the project's impacts would be beneficial. *Therefore, the* project would *result in no residual impacts under NEPA or* unavoidable adverse impacts *under CEQA* related to climate change.

4.4 Archaeological and Built-Environment

4.4.1 Archaeological and Built-Environment Methodology for Analysis

This section describes effects on archaeological and built-environment resources that would be caused by implementation of the proposed Stateline Solar Farm project and alternatives. The following discussion addresses potential environmental impacts associated with implementation of the Proposed Action and recommends measures to reduce or avoid adverse impacts anticipated from construction, operation, and decommissioning of the Proposed Action and alternatives. A discussion of cumulative impacts related to archaeological and built-environment resources is also included in this section.

The *cultural* resources analysis is intended to fulfill the goals of NEPA, CEQA, and Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470(f); NHPA) through the execution of five basic analytic phases. The initial phase is the determination of the *Area of Potential Effect (APE)* for the Proposed Action and for each alternative action under consideration. The second phase is to produce an inventory of the *cultural* resources *within the APE*. The third phase is to determine whether particular resources in an inventory are *eligible for listing on the National Register of Historic Places (NRHP)*. A preliminary evaluation of eligibility for the NRHP and the California Register of Historical Resources (CRHR) *was* made for each previously and newly recorded site (Chandler and others 2012)*, and BLM made determinations and findings in a letter to the State Historic Preservation Officer on November 1, 2012*. The fourth phase is to assess the character and the severity of the *effects* of the proposed or alternative actions on the historically significant resources that cannot be avoided. The final phase is to propose measures that would resolve *adverse effects*. The details of each of these phases follow below and provide the parameters of the present analysis.

4.4.2 Archaeological and Built-Environment Analysis under CEQA, NEPA, and the NHPA

A key part of an archaeological and built environment resources analysis under CEQA, NEPA, or Section 106 is to determine which of the resources that a proposed or alternative action may affect, are important or historically significant (each of these three regulatory programs uses slightly different terminology to refer to historically significant archaeological and built-environment resources; clarifications on the use of the terms “historical resource,” “important historic and cultural aspects of our national heritage,” and “historic property” may be found in the Chapter 7, Glossary). Subsequent impact assessments are only made for those resources that are determined to be historically significant. All sites identified in the area of potential effects (APE) were evaluated for CRHR and NRHP-eligibility

Evaluation of Historical Significance under CEQA

CEQA states that “a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment” (Public Resources Code §21084.1). CEQA defines a historical resource as a resource that 1) is listed in or has been determined eligible for listing in the CRHR by the State Historical Resources Commission; 2) is included in a local register of historical resources, as defined in Public Resources Code 5020.1(k); 3) has been identified as significant in a historical resources survey, as defined in Public Resources Code 5024.1(g); or 4) is determined to be historically significant by the CEQA lead agency [CCR Title 14, Section 15064.5(a)]. The CRHR was legislated in 1992 (Public Resources Code Sections 5020.1, 5020). In making this determination, the CEQA lead agency usually applies the CRHR eligibility criteria, as follows:

Criterion 1: It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.

Criterion 2: It is associated with the lives of persons important to local, California, or national history.

Criterion 3: It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values.

Criterion 4: It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

It is not required that a historic property display all of these qualities. Some resources are listed on the CRHR automatically (Public Resources Code Section 5024.1). These include:

- Properties that are listed on the NRHP;
- Properties that have been determined eligible for listing in the NRHP whether by the Keeper of the National Register or through a consensus determination; and
- California Historical Landmarks from Number 777 on.

In addition to historical significance, a property must have integrity to be eligible for the CRHR. Integrity is the property's ability to convey its demonstrated historical significance. The seven components of integrity are location, design, setting, materials, workmanship, feeling, and association.

A preliminary evaluation of eligibility for the CRHR was made for each previously and newly recorded site. The four standard eligibility criteria and seven elements of integrity were applied for making the preliminary evaluations for CRHR eligibility.

CEQA Significance Criteria

Under CEQA, the proposed project would have a significant impact on archaeological or built resources if it would:

- CR-1: Cause a substantial adverse change in the significance of a historical resource;
- CR-2: Cause a substantial adverse change in the significance of an archaeological resource; or
- CR-3: Disturb any human remains, including those interred outside of formal cemeteries.

A substantial adverse change as defined by the Public Resources Code constitutes "demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired" (Public Resources Code §5020.1q; California Code of Regulations, Title 14, Section 4852).

Evaluation of Historical Significance under NEPA

In accordance with Part 1502.16 of the Council on Environmental Quality's regulations for implementing NEPA, this section forms the scientific and analytic basis for the evaluating the significance of impacts on archaeological or built-environment resources by the alternatives identified for the Proposed Action. According to NEPA regulations, in considering whether an action may "significantly affect the quality of the human environment," an agency must consider, among other things, the unique characteristics of the geographic areas such as proximity to historic or cultural resources (40 CFR 1508.27(b)[3]), and the degree to which the action may adversely affect districts, sites highways, structures, or objects listed in to eligible for listing in the NRHP (40 CFR 1508.27(b)[8]).

Evaluation of Historical Significance under Section 106 *of the NHPA*

Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on such undertakings.

Historic Properties are resources that are listed on, or eligible for listing on, the NRHP. In order to be eligible for the NRHP, resources are generally, but not always, at least 50 years old, have integrity, and meet at least one of four criteria listed below. Integrity is the property's ability to convey its demonstrated historical significance through location, design, setting, materials, workmanship, feeling, and association. The eligibility criteria set forth in 36 CFR, 60.4 are:

> A. Association with events that have made a significant contribution to the broad patterns of our history;
>
> B. Association with the lives of persons significant to our past;
>
> C. Resources that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> D. Resources that have yielded or may be likely to yield information important in prehistory or history.

Section 106 of the NHPA sets forth the procedures for identifying and evaluating *historic* properties and assessing the effects of federal undertaking on those historic properties. The Section 106 process seeks to accommodate historic preservation concerns with the needs of undertakings through consultation among the agency official(s) and other parties with an interest in the effects of the undertaking on historic properties. The goal of Section 106 consultation is to identify historic properties potentially affected by the undertaking, assess the effects of the undertaking on the historic properties identified, and seek ways to avoid, minimize, or mitigate any adverse effects. However, the NHPA does not preclude an undertaking from occurring if such effects ultimately cannot be avoided, minimized, or mitigated.

Under the NHPA, an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration would be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects

may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative. Adverse effects on historic properties include, but are not limited to:

- Physical destruction of or damage to all or part of the property;
- Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR part 68) and applicable guidelines;
- Removal of the property from its historic location;
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;
- Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- Transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance (36 CFR §800.5(2)).

The BLM complies with its obligations under the NHPA through a National Programmatic Agreement and a related 2007 State Protocol Agreement specific to California. The protocol supplements the NHPA with state-specific requirements for managing resources on public lands in California and is used as the primary management guidance by BLM offices in the state for complying with the NHPA.

The Project Area of Analysis and the Area of Potential Effects

Useful in an archaeological and built-environment resource analysis under CEQA and NEPA and a required part of the Section 106 process (36 CFR Part 800) are the defined geographic limits for an analysis. The area that is typically considered when identifying and assessing impacts to archaeological or built-environment resources under CEQA is referred to as the "project area of analysis." The project area of analysis is defined here as the area within and surrounding a project site and associated linear facility corridors. The area is sufficiently large and comprehensive in geographic area to facilitate and encompass considerations of archaeological, ethnographic, and built-environment resources. The current APE corresponds to the project area of analysis:

- The full extent of the ROW application area.
- Individual historic built-environment resources *located outside of* the areas described above that could sustain indirect non-physical effects, including visual, auditory, and atmospheric effects, as a result of the undertaking, BLM's issuance of a ROW grant for the Stateline Solar Farm Project.
- For ethnographic resources, the project area of analysis or APE is expanded to take into account traditional use areas and traditional cultural properties. These resources are often identified in consultation with Native Americans and other ethnic groups, and issues that are raised by these groups may define the area of analysis.

Inventory of Archaeological and Built-Environment Resources in the APE

Two resources in the APE, the Boulder Dam-Los Angeles Transmission Line (CA-SBR-7694H) and the Edison Company Hoover Dam San Bernardino Transmission Line (CA-SBR-10315H) are eligible for the NRHP and the CRHR. Based on investigations conducted for the Stateline Solar Farm Project, *six* additional sites within the Project Study Area were *identified*, but due to re-configuration of the project footprint, these are no longer in the APE. The remaining sites and the isolated finds have been *determined to not be* eligible by *BLM*. Table 4.4-1 provides a summary of the eligible resources in the APE.

Table 4.4-1 Eligible Resources

Primary Number (P36-)	Trinomial (CA-SBR-)	Field Designation	Eligibility	Effect	Alternative				Project Study Area
					1 Proposed Action	2	3	4	
Built Environment									
007694	7694H	Boulder Dam-Los Angles Transmission Lines 1,2,3	Eligible	Not Effected	-	-	-	-	X
010315	10315H	Edison Company Hoover Dam-San Bernardino Transmission Line	Eligible	Not Effected	X	X	X	X	X
Archaeological Resources									
024309	15488/H	Multi-component prehistoric seasonal camp and historic period refuse scatter	Unevaluated	Avoided	-	-	-	-	X
024317	15496	Prehistoric temporary camp site	Unevaluated	Avoided	-	-	-	-	X
024313	15492/H	Multi-component artifact scatter	Unevaluated	Avoided	-	-	-	-	X
024315	15494	Prehistoric lithic scatter	Unevaluated	Avoided	-	-	-	-	X
024327	15506	Prehistoric temporary camp site	Unevaluated	Avoided	-	-	-	-	X
024328	15507/H	Multi-component prehistoric seasonal camp and historic period refuse scatter	Unevaluated	Avoided	-	-	-	-	X

Assessing Action Impacts

The core of an archaeological and built-environment resources analysis under CEQA, NEPA, or Section 106 is to assess the character of the impacts that a proposed or alternative action may have on these resources. The analysis takes into account three types of potential impacts which each of the three regulatory programs defines and handles in slightly different ways. The three types of potential impacts include direct, indirect, and cumulative impacts. Once the character of each potential effect of a proposed or alternative action has been assessed, CEQA requires further assessment of whether such impact is significant (see CEQA Significance Criteria, above).

Direct and Indirect Impacts

Direct and indirect impacts are those that are more clearly and immediately attributable to the implementation of proposed or alternative actions. Direct and indirect impacts are conceptually similar under CEQA and NEPA. The uses of the concepts vary under Section 106 relative to their uses under CEQA and NEPA as discussed below.

Direct and Indirect Impacts under CEQA

Direct impacts to archaeological and built-environment resources are those associated with project construction, maintenance, and decommissioning

Direct and Indirect Effects under Section 106

Section 106, on the other hand does not specifically differentiate between direct and indirect effects. Rather Section 106 focuses on "effects," which pursuant to 36 CFR § 800.16(i), is "alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP." In practice, a "direct effect" under Section 106 is limited to the direct physical disturbance of a historic property. Effects that are immediate but not physical in character, such as visual*, auditory, or atmospheric* intrusions, and reasonably foreseeable impacts that may occur at some point subsequent to the implementation of the proposed undertaking are referred to in the Section 106 process as "indirect effects." This distinction however does not impact *the* way the effect ultimately has to be analyzed under *Section 106*. Both direct and indirect effects can be adverse if they significantly alter the qualities that make a *property* eligible for the NRHP. Not all effects are adverse, as evidenced by finding of no adverse effect.

Cumulative Impacts

Cumulative impacts are slightly different concepts under CEQA and NEPA, and are, under Section 106, undifferentiated as an aspect of the potential impacts of an undertaking, of a proposed or alternative action.

Cumulative Impacts under CEQA

A cumulative impact under CEQA refers to a proposed project's incremental impacts considered over time and taken together with those of other, nearby, past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed project (Pub. Resources Code sec. 21083; Cal. Code Regs., tit. 14, secs. 15064(h), 15065(a)(3), 15130, and 15355). Cumulative impacts to archaeological and built-

environment resources in the project vicinity could occur if any other existing or proposed projects, in conjunction with the proposed project, had or would have impacts on resources that, considered together, would be significant. The previous ground disturbance from prior projects and the ground disturbance related to the future construction of a proposed project and other proposed projects in the vicinity could have a cumulatively considerable effect on archaeological deposits, both prehistoric and historic. The alteration of the natural or cultural setting which could be caused by the construction and operation of a proposed project and other proposed projects in the vicinity could be cumulatively considerable, but may or may not be a significant impact to archaeological or built-environment resources.

Cumulative Impacts under NEPA

Cumulative actions are those that when viewed with the proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement (40 CFR 1508.25(a)(2)). According to the CEQ regulations as "Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7). As such, an individual action when considered alone may not have a significant effect, but when its effects are considered in sum with the effects of other past, present, and reasonably foreseeable future actions, the effects may be significant.

Cumulative Effects under Section 106

The Section 106 regulations make explicit reference to cumulative effects only in the context of a discussion of the criteria of adverse effect (36 CFR § 800.5(a)(1)). Cumulative effects are largely undifferentiated as an aspect of the potential effects of an undertaking. Such effects are resolved in conjunction with direct and indirect effects.

Assessing the Level of Severity of Action Impacts

Once the character of the impacts that proposed or alternative actions may have on historically significant archaeological and built-environment resources has been determined, the severity of those impacts needs to be assessed. CEQA, NEPA, and Section 106 each have different definitions and tests that factor into decisions about how significant the impacts of particular actions may be.

While *Section 106* must assess effects to NRHP-eligible historic properties*, NEPA* must consider effects to all cultural resources. Assessing effects to resources to which Tribes attach cultural or religious significance is accomplished through the consultation process.

Resolving Significant/Adverse Impacts

The final phase of an archaeological and built environment resources compliance process is the resolution of those impacts that have been found to be significant or adverse. The terminology used to describe the process of impacts resolution differs among the three regulatory programs. The resolution of significant impacts under CEQA involves the development and implementation of "mitigation measures," which would minimize any such impacts (14 CCR § 15126.4). Mitigation under NEPA includes proposals that avoid or minimize any potential adverse effects of a proposed or alternative action on the quality of the human environment (40 CFR § 1502.14(f); 1502.16(h)). The definition of mitigation in the NEPA regulation includes the development of measures that would avoid, minimize, or rectify significant effects, progressively reduce or eliminate such effects over time, or provide compensation for such effects (40 CFR §

1508.20). The Section 106 process requires consideration of measures to resolve (i.e., avoid, minimize, or mitigate) identified adverse effects on *historic properties. Resolution measures* are *developed in consultation with the consulting parties, and are documented in* either a Memorandum of Agreement or a Programmatic Agreement (36 CFR § 800.6). If a Memorandum of Agreement or a Programmatic Agreement cannot be successfully developed and implemented to resolve adverse effects via the procedures outlined in 36 CFR § 800.6, then the regulations also allow for the completion of the Section 106 process without resolving adverse effects (36 CFR § 800.7)

Tribal Consultation

The BLM consults with Indian Tribes on a government-to-government basis in accordance with several authorities including NEPA, the NHPA, the American Indian Religious Freedom Act, and Executive Order 13007. Under Section 106 of the NHPA, the BLM consults with Indian Tribes as part of its responsibilities to identify, evaluate, and resolve adverse effects on historic properties affected by BLM undertakings. The tribal consultation process followed by BLM for this project is discussed in Section 5.2.3 of this EIS/EIR.

4.4.3 Alternative 1: Proposed Action

4.4.3.1 Direct and Indirect Impacts

Construction

Under Alternative 1, the Proposed Action, a total of 2,143 acres on the solar farm could potentially be subject to ground-disturbing activities. Solar Farm Alternative 1 contains 19 sites. All 19 sites date to the historic period. Of these, one site (CA-SBR-10315) is *eligible for listing* on the NRHP and CRHR. No mitigation measures are needed for this site. The 18 remaining historic-period sites (CA-SBR-13938H/P36-021772, CA-SBR-13930H/P36-021764, CA-SBR-13934H/P36-021768, CA-SBR-13939H/P36-021773, CA-SBR-13940H/P36-021774, CA-SBR-13941H/P36-021775, CASBR-13942H/P36-021776, CA-SBR-13943H/P36-021777, CA-SBR-13944H/P36-021778, CA-SBR-13945H/P36-021779, CA-SBR-13946H/P36-0021780, CA-SBR-13947H/P36-021781, CA-SBR-13949H/P36-021783, CA-SBR-13950H P36-021784, CA-SBR-13951H/P36-021785, CA-SBR-13952H/P36-021786, CA-SBR-15505H/P36-024326 and CA-SBR-7689H/P36-007689) are recommended not eligible for the NRHP. No further action is required for these resources.

Construction activities associated with the Stateline Solar Farm Project have the potential to impact *one* eligible historic built environment resource. Such disturbances could result in adverse impacts including damage to or destruction to *its* setting.

The Boulder Transmission Lines 1, 2, and 3 (CA-SBR-07694H) comprise a single resource from the historical period and was determined eligible for the NRHP in 2000 for its contributions to the industrial development of the Los Angeles Area. This resource is located within the project study area, but not within the Proposed Action footprint. No alterations are planned to the power line or towers, and there would be no direct, physical effect to the line. The construction of the solar farm would result in an effect to the setting of the transmission line, but it is not considered to be an adverse effect. Because the line is NRHP and CRHR-eligible for its association with the Los Angeles area, the setting of the line is not one of the qualities that make it NRHP and CRHR eligible.

The gen-tie line would be built parallel to a segment of the Edison Company Hoover Dam-San Bernardino Transmission Line (CA-SBR-10315H). In addition, the dirt road along this segment of the line would be improved. No alterations are planned to the power line or towers, and there

would be no direct, physical effect to the line. The construction of the solar farm would result in an effect to the setting of the transmission line, but it is not considered to be an adverse effect. Because the line is NRHP-eligible and CRHR-eligible for its association with Hoover Dam and the Los Angeles area only, the setting of the line is not one of the qualities that make it NRHP- and CRHR-eligible.

Operation and Maintenance

Operation and maintenance of the Stateline Solar Farm Project Alternative 1, the Proposed Action, would not involve any new ground disturbance, and therefore would not have any adverse impacts on eligible archaeological or built-environment resources (historic properties/historical resources).

Decommissioning

The decommissioning of the project would be similar to the construction activities described earlier, and would include demolition and removal of above-ground and subsurface facilities and site contouring and restoration. However, the duration of decommissioning would be shorter than the duration of construction. These activities would not have any adverse impacts on built-environment resources, and no adverse impacts to archaeological resources providing there are no new ground-disturbing activities.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of the Proposed Action would not be anticipated to have adverse impacts on cultural resources. By placing limitations on future land uses that cause ground disturbance within the newly added *23,363* acre area, this action would provide a beneficial impact in reducing the potential for the disturbance of existing cultural resources.

4.4.3.2 Section 106 Effect Determinations

Construction

Construction of Alternative 1, the Proposed Action, would not cause an adverse effect to historic properties. Adverse effects to archaeological sites *potentially* encountered during construction would be mitigated *through implementation of measure CULT-3, and* as developed through consultation with all consulting parties *to* the Section 106 process.

Operation and Maintenance

Operation and maintenance of Alternative 1, the Proposed Action, would not cause an adverse effect to historic properties.

Decommissioning

Decommissioning of Alternative 1, the Proposed Action, would not cause an adverse effect to historic properties.

4.4.3.3 CEQA Significance Determinations

CR-1

Construction

Construction of Alternative 1, the Proposed Action, would not cause a substantial change in the significance of a historic resource.

Operation and Maintenance

Operation and maintenance of Alternative 1, the Proposed Action, would not cause a substantial change in the significance of a historic resource.

Decommissioning

Decommissioning Alternative 1, the Proposed Action, would not cause a substantial change in the significance of a historic resource.

CR-2

Construction

Construction of Alternative 1, the Proposed Action, would not cause a substantial adverse change in the significance of an archaeological resource. Impacts to archaeological discoveries encountered during construction would be reduced to less than significant through implementation of MM-CULT-3.

Operation and Maintenance

Operation and maintenance of Alternative 1, the Proposed Action, would not involve new ground disturbance and therefore would not cause a substantial change in the significance of an archaeological resource.

Decommissioning

Decommissioning Alternative 1, the Proposed Action, as long as decommissioning does not involve new ground disturbance, would not cause a substantial change in the significance of an archaeological resource. Should disturbance be necessary or should archaeological resources be discovered during the course of decommissioning, the mitigation measures outlined in MM-CULT-3, would be implemented.

CR-3

Construction

Construction of Alternative 1, the Proposed Action, would not disturb any known human remains.

Operation and Maintenance

Operation and Maintenance of Alternative 1 would not disturb any known human remains.

Decommissioning

The Decommissioning of Alternative 1 would not disturb any known human remains.

4.4.4 Alternative 2: 2,385 Ac Alternative

4.4.4.1 Direct and Indirect Impacts

Construction

Under Alternative 2, a total of 2,385 acres on the solar farm could potentially be subject to ground-disturbing activities*.* Alternative 2 contains a total of 15 sites. All 15 sites date to the historic period (CA-SBR-13930H/P36-021764, CA-SBR-13945H/P36-021779, CA-SBR-13946H/P36-0021780, CA-SBR-13947H/P36-021781, CA-SBR-13949H/P36-021783, CA-SBR-15483H/P36-024304, CA-SBR-15484H/P36-024305, CA-SBR-15485H/P36-024306, CA-SBR-15487H/P36-024308, CA-SBR-15498H/P36-024319, CA-SBR-15505H/P36-024326, CA-SBR-7689H/P36-007689, CA-SBR-12574H/P36-013416, P36-14501 and CA-SBR-10315/P36-010315). Of these, CA-SBR-10315/P36-010315 is *eligible for listing* on the NRHP and CRHR, and impacts to this resource would be the same as discussed for the Proposed Action. The remaining 14 historic-period resources are recommended not eligible for the NRHP and CRHR and no further action is required.

Operation and Maintenance

Similar to the Proposed Action, operation and maintenance activities associated with Alternative 2 would not require any additional ground disturbance. Therefore, operations and maintenance associated with Alternative 2 would not have adverse impacts to eligible archaeological or built-environment resources.

Decommissioning

Decommissioning of the project under Alternative 2 would be the same as the Proposed Action.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of Alternative 2 would not be anticipated to have adverse impacts on cultural resources. By placing limitations on future land uses that cause ground disturbance within the newly added *23,121* acres, this action would provide a beneficial impact in reducing the potential for the disturbance of existing cultural resources.

4.4.4.2 Section 106 Effect Determinations

Construction

Construction of Alternative 2 would not cause an adverse effect to historic properties. Adverse effects to archaeological sites potentially encountered during construction would be mitigated through implementation of measure CULT-3, and as developed through consultation with all consulting parties to the Section 106 process.

Operation and Maintenance

Operation and maintenance of Alternative 2 would not cause an adverse effect to a historic property.

Decommissioning

Decommissioning of Alternative 2 would not cause an adverse effect to a historic property.

4.4.4.3 CEQA Significance Determinations

CR-1

Construction, operation and maintenance, and decommissioning of Alternative 2 have the same impact as Alternative 1. Alternative 2 would not cause a substantial change in the significance of a historic resource.

CR-2

Construction

Impacts would be the similar to Alternative 1. Impacts to archaeological discoveries encountered during construction would be reduced to less than significant through implementation of MM-CULT-3.

Operation and Maintenance

Operation and maintenance of Alternative 2 would not cause a substantial change in the significance of an eligible archaeological resource.

Decommissioning

The decommissioning of Alternative 2 would not cause a substantial change in the significance of an eligible archaeological resource.

CR-3

Construction, operation and maintenance, and decommissioning of Alternative 2 have the same impact as Alternative 1. Alternative 2 would not disturb any known human remains.

4.4.5 ***Revised*** Alternative 3: ***1,685*** Ac Alternative

4.4.5.1 Direct and Indirect Impacts

Construction

Under *Revised* Alternative 3, a total of *1,685* acres on the solar farm could potentially be subject to ground-disturbing activities. Construction activities associated with *Revised* Alternative 3 would have the same potential impacts as the Proposed Action. A total of 23 sites are located within this alternative. All 23 sites are historic-period resources (CA-SBR-13930H/P36-021764, CA-SBR-13931H/P36-021765, CA-SBR-13938H/P36-021772, CA-SBR-13939H/P36-021773,

CA-SBR-13940H/P36-021774, CA-SBR-13941H/P36-021775, CA-SBR-13942H/P36-021776, CA-SBR-13943H/P36-021777, CA-SBR-13944H/P36-021778, CA-SBR-13945H/P36-021779, CA-SBR-13946H/P36-021780, CA-SBR-13947H/P36-021781, CA-SBR-13949H/P36-021783, CA-SBR-13950H/P36-021784, CA-SBR-13951H/P36-021785, CA-SBR-13952H/P36-021786, CA-SBR-15490H/P36-024311, CA-SBR-15498H/P36-024319, CA-SBR-15505H/P36-024326, CA-SBR-15508H/P36-024329, CA-SBR-7689H P36-007689, P33-14501, and CA-SBR-10315H/P36-010315). CA-SBR-10315H/P36-010315 is *eligible for listing on* the NRHP and CRHR, and impacts to this resource would be the same as discussed for the Proposed Action. The remaining 22 historic-period sites are not recommended eligible and require no further action.

Operation and Maintenance

Operation and maintenance of *Revised* Alternative 3 would not involve any new ground disturbance, and therefore would not have any adverse impacts on eligible historic properties/historical resources.

Decommissioning

Decommissioning of the project under *Revised* Alternative 3 would not have any adverse impacts on cultural resources, providing there are no new ground-disturbing activities.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of *Revised* Alternative 3 would not be anticipated to have adverse impacts on cultural resources. By placing limitations on future land uses that cause ground disturbance within the newly added *23,821* acre area, this action would provide a beneficial impact in reducing the potential for the disturbance of existing cultural resources.

4.4.5.2 Section 106 Effect Determinations

Construction

Construction of *Revised* Alternative 3 would have effects similar to the Proposed Acton, Alternative 1. Effects to archaeological discoveries *potentially* encountered during construction would be mitigated *through implementation of measure CULT-3, and* as developed through consultation with all consulting parties *to* the Section 106 process.

Operation and Maintenance

Operation and maintenance of *Revised* Alternative 3 would not cause an adverse effect to a historic property.

Decommissioning

Decommissioning of *Revised* Alternative 3 would not cause an adverse effect to a historic property.

4.4.5.3 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) would be the same as described above for Alternative 2, based on the Significance Criteria presented in Section 4.4.2. Potential impacts of *Revised* Alternative 3 would be less than significant.

4.4.6 Alternative 4: Reduced Acreage Alternative

4.4.6.1 Direct and Indirect Impacts

Under Alternative 4, a total of 1,766 acres on the solar farm could potentially be subject to ground-disturbing activities. Alternative 4 contains a total of 10 sites. All 10 sites date to the historic period (CA-SBR-13930H/P36-021764, CA-SBR-13945H/P36-021779, CA-SBR-13946H/P36-0021780, CA-SBR-13947H/P36-021781, CA-SBR-13949H/P36-021783, CA-SBR-15498H/P36-024319, CA-SBR-15505H/P36-024326, CA-SBR-7689H/P36-007689, P36-14501 and CA-SBR-10315/P36-010315). Of these, CA-SBR-10315/P36-010315 is *eligible for listing* on the NRHP and CRHR, and impacts to this resource would be the same as discussed for the Proposed Action. The remaining 9 historic-period resources are recommended not eligible for the NRHP and CRHR and no further action is required.

Operation and Maintenance

Similar to the Proposed Action, operation and maintenance activities associated with Alternative 4 would not require any additional ground disturbance. Therefore, operations and maintenance associated with Alternative 4 would not have adverse impacts to eligible archaeological or built-environment resources.

Decommissioning

Decommissioning of the project under Alternative 4 would be the same as the Proposed Action.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of Alternative 4 would not be anticipated to have adverse impacts on cultural resources. By placing limitations on future land uses that cause ground disturbance within the newly added *23,740* acre area, this action would provide a beneficial impact in reducing the potential for the disturbance of existing cultural resources.

4.4.6.2 Section 106 Effect Determinations

Construction

Adverse effects to archaeological discoveries encountered during construction would be mitigated *through implementation of measure CULT-3, and* as developed through consultation with all consulting parties *to* the Section 106 process.

Operation and Maintenance

Operation and maintenance of Alternative 4 would not cause an adverse effect to a historic property.

Decommissioning

Decommissioning of Alternative 4 would not cause an adverse effect to a historic property.

4.4.6.3 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) would be the same as described above for Alternative 2, based on the Significance Criteria presented in Section 4.4.2. Potential impacts of Alternative 4 would be less than significant. In addition, Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

4.4.7 Alternative 5: No Action Alternative

4.4.7.1 Direct and Indirect Impacts

Under Alternative 5, the Proposed Action would not be approved and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Therefore, the impacts of the Proposed Action would not occur. However, the land on which the project is proposed would become available to other uses that are consistent with BLM's CDCA plan, including another renewable energy project.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under the No Action Alternative. Land uses associated with the Ivanpah DWMA would continue as they are today. Because the boundary of the DWMA would not be modified, the associated land area of *23,363* acres would be available to other land uses, as are acceptable in the CDCA Plan. Some of these land uses, including other solar facilities, could create ground disturbance that could have an adverse impact on cultural resources. Therefore, the No Action Alternative would not have the potential beneficial impact to cultural resources associated with limiting future land uses in that area.

4.4.7.2 Section 106 Effect Determinations

The No Action Alternative would not cause an adverse effect to a historic property.

4.4.7.3 CEQA Significance Determinations

No impacts would occur to cultural resources under Alternative 5.

4.4.8 Alternative 6: No Project, Exclude Solar Alternative

4.4.8.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. As a result, no ground disturbing activities associated with the Proposed Action would occur, and there would therefore be no potential for impacts to cultural resources.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of Alternative 6 would not be anticipated to have adverse impacts on cultural resources. By placing limitations on future land uses that cause ground disturbance within the newly added 25,506 acre area, this action would provide a beneficial impact in reducing the potential for the disturbance of existing cultural resources.

4.4.8.2 Section 106 Effect Determinations

Alternative 6 would not cause an adverse effect to a historic property.

4.4.8.3 CEQA Significance Determinations

No impacts would occur to cultural resources under Alternative 6.

4.4.9 Alternative 7: No Project, Approve Solar Alternative

4.4.9.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The Stateline Solar Farm Project would not be constructed on the project site and the project site would remain vacant in the near-term. Under this alternative, the BLM would not approve the proposed facility, but would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the site. If this were to occur, it is likely that construction and operation impacts to cultural resources would be similar to the impacts described for Alternative 1.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 7. Land uses associated with the Ivanpah DWMA would continue as they are today. If a solar or other renewable energy facility is proposed on the site in the future, the impact on cultural resources would be considered in a project-specific environmental analysis that would occur at that time.

4.4.9.2 Section 106 Effect Determinations

Alternative 7 would not cause an adverse effect to a historic property.

4.4.9.3 CEQA Significance Determinations

No impacts would occur to cultural resources under Alternative 7.

4.4.10 Cumulative Impacts

4.4.10.1 Geographic Extent/Context

The regulations implementing Section 106 of the NHPA contemplate close coordination between the NEPA and NHPA processes (36 CFR §800.8), and expressly integrate consideration of cumulative concerns within the analysis of a proposed action's potential direct

and indirect effects by defining "adverse effect" to include "reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative" (36 CFR §800.5(a)(1)).

The geographic scope of the cumulative effects analysis of the proposed Stateline facility for cultural resources is the APE, because the APE encompasses an area larger than the proposed Stateline site and provides a reasonable context wherein cumulative actions could affect cultural resources. The APE consists of approximately a 10-mile radius around the proposed facility site. This is a large enough area to encompass any indirect effects of the project on cultural resources that may combine with similar effects caused by other projects. For instance, the visibility of the proposed facility from surrounding areas could alter the context of nearby historic and prehistoric resources, or affect certain ethnographic values attributed to the area. Because the visibility of the proposed facility diminishes substantially beyond ten miles, a ten-mile radius around the site represents an appropriate geographic limit for the cumulative impact analysis for cultural resources.

Determining the temporal scope requires estimating the length of time the effects of the proposed action will last, either individually or in combination with other anticipated effects. The temporal scope of impacts to cultural resources during the development of cumulative projects along with the proposed facility would be the through the end of project decommissioning, because any direct or indirect effects of the project would only occur during the life of the project.

4.4.10.2 Existing Cumulative Conditions

Archaeological and built-environment resources documented in support of this EIR/EIS are typical of resources in the desert region of eastern California. Prehistoric site types include lithic scatters and seasonal camps. Historic-period site types include roads, fence lines, cairns, survey markers, refuse scatters, and transmission lines.

Cumulative conditions for cultural resources involve the loss of qualities that make the resources eligible for the CRHR and NRHP. For prehistoric and historic archaeological resources this is the loss of non-renewable scientifically important data and its context. For places to which Tribes attach cultural or religious significance this is a loss of the traditional values associated with the resources. The implementation of cultural resource mitigation measures during ground-disturbing projects has resulted in the collection and permanent preservation of cultural material that would otherwise have been destroyed. This has reduced the cumulative effects of such projects on cultural resources.

Projects in the area of the Proposed Action which have affected cultural resources include I-15, the Union Pacific Railroad, Ivanpah SEGS, Silver State Phase I solar project, AT&T and Sprint fiber optic lines, the Kern River Gas Transmission Line, Calnev Petroleum Products Pipeline, the Walter Higgins Bighorn Generation Station, Molycorp Minerals facility, the Los Angeles Department of Water and Power (LADWP) and Southern California Electric (SCE) transmission lines, the Primm Resort facility, and Primm Valley Golf Club. Cultural resource impacts from the Proposed Action, in addition to these past and existing projects would combine with reasonably, foreseeable future projects to determine the cumulative effects on cultural resources.

4.4.10.3 Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects; various BLM authorized actions/activities, proposed or approved projects within the County's jurisdiction; and other actions/activities that

the agencies consider reasonably foreseeable. Table 4.1-2 summarizes the cumulative projects that would have the potential to combine with the Proposed Action and result in cumulative impacts to cultural resources. Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA, or will do so prior to approval. Even if environmental review has not been completed for the cumulative projects described in Table 4.1-2, their effects were considered in the cumulative impacts analysis in the *PA and* EIS/EIR.

Projects currently under construction in the vicinity of the proposed facility include the Ivanpah SEGS solar facility. Proposed projects in the vicinity of the proposed facility that would have potential impacts to cultural resources include the Southern Nevada Supplemental Airport, JPOE, Desert Xpress high speed passenger rail line, Silver State Phase 2 solar facility, and Calnev Pipeline Expansion Project.

4.4.10.4 Cumulative Impacts Associated with Proposed Action

Construction

Construction of the Proposed Action is not expected to contribute to direct impacts on eligible cultural resources. If any archaeological sites are inadvertently encountered during construction, *mitigation measures CULT-2 and CULT-3 require archaeological monitoring and the development of a post-review discoveries plan that will outline the methods by which discoveries would be managed. The plan would follow the procedures outlined in 36 CFR §800.3, but discoveries would be managed in accordance with the Plan.* Construction of other projects *already constructed* in the geographic area for the cumulative analysis *prior to implementation of the NHPA have likely resulted* in damage to previously unknown archaeological sites encountered during construction*, but the magnitude and scope of that damage is unknown. Future projects could also result in damage to previously unknown resources, but that damage would likely be avoided or minimized due to mitigation measures applied to those projects.*

The Proposed Action would avoid all known eligible archaeological and built-environment resources and unanticipated impacts to inadvertently discovered archaeological sites would be mitigated. No cumulative loss or displacement of known *eligible* archaeological or built-environment resources resulting from the construction of the facility and the projects located within the same geographic context is expected, due to mitigation of impacts for known *eligible* resources and implementation of mitigation measures during construction, including monitoring. Individually and cumulatively, the archaeological and built-environment surveys and data collection performed for the Stateline project and other projects in the cumulative analysis area contribute to scientific knowledge about the prehistoric and historic uses of the area, including information about prior inhabitants and their cultures.

Operation and Maintenance

The Proposed Action will have an impact on both the Boulder Transmission Lines (P36-06794/NRHP-E-94-001) and the Hoover Dam to San Bernardino Transmission Line. Construction of the Proposed Action will contribute to a cumulative impact on the resources, along with other renewable energy projects in the Ivanpah Valley (including Ivanpah SEGS). The cumulative effect of these projects *has* required that both lines be upgraded, including tower replacement. These effects *have been* addressed under the Lattice Steel Towers Programmatic Agreement that is being implemented separately by Southern California Edison.

Decommissioning

The decommissioning of the Proposed Action, consistent with the Applicant's Decommissioning Plan and other BLM requirements, would greatly reduce any project-related contributions to cumulative effects. In addition, it is unlikely that any unanticipated resources would be discovered during decommissioning activities, as all such cultural resources at the site would probably have been previously identified during either construction or operation. Therefore, project decommissioning would not contribute to any adverse cumulative impacts on cultural resources. In addition, with decommissioning and restoration, the facility site would be restored to a condition similar to pre-construction conditions.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of the Proposed Action would not be anticipated to have adverse impacts on cultural resources. By placing limitations on future land uses that cause ground disturbance within the newly added *23,363* acre area, this action would provide a beneficial impact in reducing the potential for the disturbance of existing cultural resources by other projects in the future. As a result, this action would contribute to a cumulative beneficial impact on cultural resources within the newly protected area.

4.4.10.5 CEQA Significance Determinations

CR-1

Construction, operation and maintenance, and decommissioning of the facility would not cause a substantial change in the significance of a historic resource.

CR-2

Construction, operation and maintenance, and decommissioning of the Proposed Action would not cause a substantial change in the significance of an eligible archaeological resource. Cumulative impacts during construction would be reduced to less than significant through implementation of mitigation measures MM-CULT-2. If avoidance is not feasible, implementation of MM-CULT-1 would reduce the cumulative impact to less than significant.

CR-3

Construction, operation and maintenance, and decommissioning of the facility would not disturb any known human remains.

4.4.10.6 Alternatives

Alternative 2: 2,385 Ac Alternative

Alternative 2 will have the same contribution to the cumulative impact on the Boulder Transmission Lines (P36-06794/NRHP-E-94- 001) and the Hoover Dam to San Bernardino Transmission Line as the Proposed Action. These effects are being addressed under the Lattice Steel Towers Programmatic Agreement that is being implemented separately by Southern California Edison. Fourteen resources that have been recommended as not meeting the criteria for the NRHP or the CRHR will also be impacted by this alternative.

Revised **Alternative 3: *1,685* Ac Alternative**

Revised Alternative 3 will have the same contribution to the cumulative impact on the Boulder Transmission Lines (P36-06794/NRHP-E-94- 001) and the Hoover Dam to San Bernardino Transmission Line as the Proposed Action. These effects are being addressed under the Lattice Steel Towers Programmatic Agreement that is being implemented separately by Southern California Edison. Twenty-two resources that have been recommended as not meeting the criteria for the NRHP or the CRHR will also be impacted by this alternative.

Alternative 4: Reduced Acreage Alternative

Alternative 4 will have the same contribution to the cumulative impact on the Boulder Transmission Lines (P36-06794/NRHP-E-94- 001) and the Hoover Dam to San Bernardino Transmission Line as the Proposed Action. These effects are being addressed under the Lattice Steel Towers Programmatic Agreement that is being implemented separately by Southern California Edison. Nine resources that have been recommended as not meeting the criteria for the NRHP or the CRHR will also be impacted by this alternative.

Alternative 5: No Action Alternative

No impacts to eligible cultural resources would occur under Alternative 5.

Alternative 6: No Project, Exclude Solar Alternative

No impacts to eligible cultural resources would occur under Alternative 6.

Alternative 7: No Project, Approve Solar Alternative

No impacts to eligible cultural resources would occur under Alternative 7.

4.4.11 Mitigation Measures

MM-CULT-1: ***SHPO*** Consultation.

The BLM made its determinations of eligibility and findings of effect for the project in consultation with the SHPO and other consulting parties, including Indian tribes. The BLM found that there would be no adverse effect to historic properties. A Memorandum of Agreement (MOA) is not necessary because there are no adverse effects.

In the consultation letter dated November 1, 2012, BLM developed and the SHPO concurred on seven measures that will be required of the Applicant. These measures are:

> *1. Archaeological sites that can be protected from direct impacts, but are within 50 feet, including buffer areas, of proposed construction activities will be identified and labeled as Environmentally Sensitive Areas (ESAs). This includes archaeological sites determined eligible for inclusion in the NRHP and sites that have not been formally evaluated, but are being treated as eligible and avoided for project management purposes.*
>
> *2. The ESAs will be designated by marking the boundaries of sites with appropriate buffer zones (generally a buffer of 20 feet beyond the outer limits of the site extent, as*

demonstrated by surface and/or subsurface indications) using temporary fencing or other easily recognizable boundary defining materials. These areas will be shown on the engineering plans for the project as off limits to construction activities.

3. Once established, an ESA will define areas where construction can occur while preventing construction activities and damage to archaeological resources within the designated ESA.

4. ESAs will be identified and established by a qualified archaeologist prior to initiation of ground disturbing activities and will be maintained for the duration of the work effort in the ESA vicinity.

5. Qualified archaeologist(s) will be on site during construction to observe grading, trenching or other excavation for any facilities, roads or other project components related to the undertaking near ESAs and in other areas determined appropriate for full-time monitoring.

6. The Applicant will develop procedures for archaeological monitoring, post-review discovery and unanticipated effects and submit to BLM for review and consultation with consulting parties.

7. The BLM will require the Applicant to develop and implement a Long Term Management Plan (LTMP) for the post-construction monitoring and condition assessment of sites in the APE which could be subject to project operations and maintenance activities.

MM-CULT-2: Monitoring. The Applicant will retain a qualified archaeologist(s) to conduct full-time monitoring of all areas of the Project during ground disturbing activity. The archaeological monitor shall have a working knowledge of the Project area and will be competent to identify the range of cultural resources known to exist in the vicinity of the Project. The monitor will have the responsibility to temporarily stop construction activities to inspect areas where ground disturbance has potentially revealed cultural resources. The monitor shall have the responsibility to stop all construction activities in the event an unanticipated cultural resource is located. The Applicant shall suspend construction activities until the archaeologist has inspected the discovery and determined any required or recommended treatment for the resource(s).

MM-CULT-3: Unanticipated Discoveries Plan. Prior to any construction activity, the Applicant's archaeologist shall implement an unanticipated discovery plan that will describe, in detail, the actions to be taken in the event archaeological resources, including human remains, are inadvertently discovered during the course of construction activities. This plan would require compliance with all governing laws.

4.4.12 Residual Impacts After Mitigation

The implementation of the required mitigation measures would substantially reduce potential adverse impacts on *historic properties*. With implementation of the appropriate mitigation measures, there would *be* no residual impacts under NEPA, and impacts under CEQA would be reduced to less than significant.

4.5 Environmental Justice

4.5.1 Methodology for Analysis

According to CEQ, BLM, and EPA guidance, US Census data are typically used to determine minority and low-income population percentages in the affected area of a project in order to conduct a quantitative assessment of potential environmental justice impacts. This methodology uses screening-level analyses of the census data from the project area to identify low-income and minority percentage areas. If the jurisdiction has a population of 50 percent or greater for either the low-income or minority categories, it is identified for more detailed analysis. Similarly, if the jurisdiction has a population meaningfully greater (50 percent or greater) than the minority or low-income population percentage in the general population of the jurisdiction, it is identified for more detailed analysis.

In the case of the proposed Stateline Solar Farm, as discussed in Section 3.5, population density is very low in the area and the community of Primm has the only minority population greater than 50 percent within 3 miles of the proposed site. Census data that can be used to conduct the screening-level analysis to identify low-income populations are not available. Therefore, low-income populations in the vicinity of the proposed Stateline Solar Farm Project could not be quantitatively characterized from the use of census data.

For purposes of environmental justice, a disproportionately high environmental impact that is significant (as defined by NEPA) refers to an impact or risk of an impact on the natural or physical environment in a low-income or minority community that appreciably exceeds the environmental impact on the larger community. Such effects may include ecological, cultural, human health, economic, or social impacts. An adverse environmental impact is an impact that is determined to be both harmful and significant (as defined by NEPA; CEQ 1997). Adverse health effects to be evaluated within the context of environmental justice impacts may include bodily impairment, infirmity, illness, or death. Disproportionately high and adverse human health effects occur when the risk or rate of exposure to an environmental hazard for a minority or low-income population is significant (as defined by the NEPA) and appreciably exceeds the risk or exposure rate for the general population or for another appropriate comparison group (CEQ 1997).

4.5.2 CEQA Significance Criteria

CEQA does not require the analysis of environmental justice impacts and so does not provide specific significance criteria for environmental justice impacts. Consequently, no CEQA significance determinations have been made for the analysis of environment justice impacts below.

4.5.3 Alternative 1: Proposed Action

4.5.3.1 Direct and Indirect Impacts

Although the three Census blocks containing the community of Primm, Nevada, contain a minority population over 50 percent, these residents are located more than 2.5 miles from the proposed facility. No residents live within 2.5 miles of the proposed facility. Based on the analysis of impacts for all resource areas presented in this EIS/EIR, it was determined that there would be no significant adverse health impacts on members of the public and, therefore, there would be no disproportionate and adverse impacts felt by minority or low-income populations within the project affected area. Similarly, given the potential environmental effects of the proposed action on the physical environment (air, water, and terrestrial resources) and

socioeconomic conditions, there would be no disproportionately high and adverse impacts on minority or low-income populations because of negative environmental effects.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the existing Ivanpah DWMA would not have an adverse impact on minority or low income populations in the area. The action of modifying the DWMA would not result in any significant adverse impacts that could affect public health, the physical environment, or socioeconomic conditions, and would therefore not disproportionately affect minority or low income populations.

4.5.3.2 CEQA Significance Determinations

Because environmental justice relates to social and economic effects, CEQA does not require significance determinations for these types of impacts.

4.5.4 Alternative 2: 2,385 Ac Alternative

4.5.4.1 Direct and Indirect Impacts

Potential environmental justice impacts of Alternative 2 would be the same as those described for the Proposed Action. The proximity of the facility to local populations would be the same under Alternative 2 as the Proposed Action. In addition, Alternative 2 would not result in significant adverse impacts on the health of members of the public or on the physical environment and socioeconomic conditions. Therefore, Alternative 2 would not have a disproportionate impact on any minority or low-income populations.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the existing Ivanpah DWMA would be the same under Alternative 2 as under the Proposed Action. Like the Proposed Action, the action of modifying the DWMA under Alternative 2 would not result in any significant adverse impacts that could affect public health, the physical environment, or socioeconomic conditions, and Alternative 2 would therefore not disproportionately affect minority or low income populations.

4.5.4.2 CEQA Significance Determinations

Because environmental justice relates to social and economic effects, CEQA does not require significance determinations for these types of impacts.

4.5.5 *Revised* Alternative 3: *1,685* Ac Alternative

4.5.5.1 Direct and Indirect Impacts

Potential environmental justice impacts of *Revised* Alternative 3 would be the same as those described for the Proposed Action. The proximity of the facility to local populations would be the same under *Revised* Alternative 3 as the Proposed Action. In addition, *Revised* Alternative 3 would not result in significant adverse impacts on public health or on the physical environment and socioeconomic conditions. Therefore, *Revised* Alternative 3 would not have a disproportionate impact on any minority or low-income populations.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the existing Ivanpah DWMA would be the same under *Revised* Alternative 3 as under the Proposed Action. Like the Proposed Action, the action of modifying the DWMA under *Revised* Alternative 3 would not result in any significant adverse impacts that could affect public health, the physical environment, or socioeconomic conditions, and *Revised* Alternative 3 would therefore not disproportionately affect minority or low income populations.

4.5.5.2 CEQA Significance Determinations

Because environmental justice relates to social and economic effects, CEQA does not require significance determinations for these types of impacts.

4.5.6 Alternative 4: Reduced Acreage Alternative

4.5.6.1 Direct and Indirect Impacts

Potential environmental justice impacts of Alternative 4 would be the same as those described for the Proposed Action. The proximity of the facility to local populations would be the same under Alternative 4 as the Proposed Action. In addition, Alternative 4 would not result in significant adverse impacts on public health or on the physical environment and socioeconomic conditions. Therefore, Alternative 4 would not have a disproportionate impact on any minority or low-income populations.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the existing Ivanpah DWMA would be the same under Alternative 4 as under the Proposed Action. Like the Proposed Action, the action of modifying the DWMA under Alternative 4 would not result in any significant adverse impacts that could affect public health, the physical environment, or socioeconomic conditions, and Alternative 4 would therefore not disproportionately affect minority or low income populations.

4.5.6.2 CEQA Significance Determinations

Because environmental justice relates to social and economic effects, CEQA does not require significance determinations for these types of impacts.

4.5.7 Alternative 5: No Action Alternative

4.5.7.1 Direct and Indirect Impacts

Under Alternative 5, no action would occur and existing conditions relevant to minority and low-income populations would continue. No impact associated with the proposed facility would occur.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under the No Action Alternative. Land uses and management requirements associated with the Ivanpah DWMA

would continue as they are today. The No Action Alternative would not have a disproportionate adverse impact on minority and low-income populations.

4.5.7.2 CEQA Significance Determinations

Because environmental justice relates to social and economic effects, CEQA does not require significance determinations for these types of impacts.

4.5.8 Alternative 6: No Project, Exclude Solar Alternative

4.5.8.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. Because the CDCA Plan would be amended so no solar energy projects can be approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. Therefore, this No Action Alternative would not allow future solar development which could impact local minority or low income populations.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the existing Ivanpah DWMA would be the same under Alternative 6 as under the Proposed Action. Like the Proposed Action, the action of modifying the DWMA under Alternative 6 would not result in any significant adverse impacts that could affect public health, the physical environment, or socioeconomic conditions, and Alternative 6 would therefore not disproportionately affect minority or low income populations.

4.5.8.2 CEQA Significance Determinations

Because environmental justice relates to social and economic effects, CEQA does not require significance determinations for these types of impacts.

4.5.9 Alternative 7: No Project, Approve Solar Alternative

4.5.9.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The Stateline Solar Farm Project would not be constructed on the project site and the project site would remain vacant in the near-term. Under this alternative, the BLM would not approve the proposed facility, but would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the site. *While the impacts of any such future project are speculative at this time, the construction* and operation requirements for solar technologies *on the Project site would not be* expected to have significant adverse effects on human health, the physical environment, or socioeconomic conditions that could disproportionately affect minority or low income populations.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 7. Land uses associated with the Ivanpah DWMA would continue as they are today. Alternative 7 would not have a disproportionate adverse impact on minority and low-income populations.

4.5.9.2 CEQA Significance Determinations

Because environmental justice relates to social and economic effects, CEQA does not require significance determinations for these types of impacts.

4.5.10 Cumulative Impacts

4.5.10.1 Geographic Extent/Context

The affected area for environmental justice impacts would be jurisdictions within one-half mile of the Proposed Action or its alternatives to identify project-specific, localized impacts. Similarly, for environmental justice impacts associated with the Proposed Action or its alternatives to combine with those of other projects, the environmental justice impacts of the other projects would have to overlap the affected area of the Proposed Action or its alternatives. Assuming that other projects would also result in environmental justice impacts within one-half mile of the project area, to overlap with the Proposed Action's affected area these other projects would need to be within one mile of the Proposed Action. Additionally, as any environmental justice impacts generated by the proposed Stateline solar facility would be limited to occurring within the lifespan of the project, cumulative environmental justice impacts would also occur only during the lifespan of the project.

4.5.10.2 Existing Cumulative Conditions

Because there are no residents within the one-mile radius considered in this analysis, there are no environmental justice impacts occurring due to the past and present projects in the area.

4.5.10.3 Reasonably Foreseeable Projects

Table 4.1-1 lists cumulative projects in the vicinity of the project site and surrounding area. Several types of development projects could contribute to the cumulative impact of the Proposed Action and alternatives, including housing development projects, commercial and industrial development, transportation projects, and renewable energy projects. These types of past and existing projects could combine with potential impacts of the Proposed Action or an alternative to create environmental justice impacts if potentially impacted populations were present.

Past and present projects located within one mile which could overlap with effects of the Proposed Action and alternatives include Ivanpah SEGS, I-15, several transmission lines, and the Primm Valley Golf Course. In addition, the EITP, Desert Xpress high speed passenger rail line, and JPOE are proposed, and would be located within one mile of the proposed Stateline facility. Each of these projects has either undergone independent environmental review pursuant to NEPA and/or CEQA or will do so prior to approval.

4.5.10.4 Cumulative Impacts Associated with Proposed Action

Construction, Operations and Maintenance, and Decommissioning

The project area consists of undeveloped land and open space land. The closest residents are located almost 3 mi from the proposed site. A minority population was identified in Primm, Nevada. However, no census data are available to determine the proportion of low income persons within the affected area of the project. However, given the limited potential for significant adverse effects on human health, the physical environment, or socioeconomic conditions from the proposed facility and the other projects within a one-mile radius, and the large distance to nearby residents, there is no potential for construction, operations, or decommissioning of the proposed project to contribute to disproportionate cumulative environmental justice impacts.

Modify Boundary of Ivanpah DWMA

Modification of the Ivanpah DWMA boundary would not result in. significant adverse effects on human health, the physical environment, or socioeconomic conditions. Therefore, this action would not contribute to cumulative impacts to environmental justice.

4.5.10.5 CEQA Significance Determinations

Because environmental justice relates to social and economic effects, CEQA does not require significance determinations for these types of impacts.

4.5.10.6 Alternatives

Alternative 2: 2,385 Ac Alternative

Like the Proposed Action, Alternative 2 would not have any environmental justice impacts. Therefore, the cumulative impacts associated with Alternative 2 would be the same as those described above for the Proposed Action.

***Revised* Alternative 3: *1,685* Ac Alternative**

Like the Proposed Action, *Revised* Alternative 3 would not have any environmental justice impacts. Therefore, the cumulative impacts associated with *Revised* Alternative 3 would be the same as those described above for the Proposed Action.

Alternative 4: Reduced Acreage Alternative

Like the Proposed Action, Alternative 4 would not have any environmental justice impacts. Therefore, the cumulative impacts associated with Alternative 4 would be the same as those described above for the Proposed Action.

Alternative 5: No Action Alternative

Alternative 5, the No Action Alternative, would not have any environmental justice impacts. Therefore, this alternative would not contribute to cumulative environmental justice impacts.

Alternative 6: No Project, Exclude Solar Alternative

Alternative 6, the No Project Exclude Solar Alterantive, would not result in any environmental justice impact and therefore would not contribute to cumulative environmental justice impacts.

Alternative 7: No Project, Approve Solar Alternative

Alternative 7, the No Project, Approve Solar Alterantive, would not result in any environmental justice impact and therefore would not contribute to cumulative environmental justice impacts. While the site could potentially be used for solar or other development in the future*, the impacts associated with such future project would be speculative at this time.*

4.5.11 Mitigation Measures

The Proposed Action would not have a disproportionate impact on any minority or low-income populations; therefore, no mitigation would be required.

4.5.12 Residual Impacts after Mitigation

There would be no adverse, unavoidable impacts to environmental justice as a result of construction, operation and maintenance, or decommissioning of the Proposed Action.

4.6 Lands and Realty

4.6.1 Methodology for Analysis

This section discusses the lands and realty impacts that would occur with implementation of the Proposed Action or alternatives. Potential land and realty effects may occur from conflicts with existing or authorized land uses or conflicts with applicable land use plans, policies, or regulations. For this reason, the discussions of each of the different alternatives focus both on evaluating their compatibility with existing or authorized land uses, as well as their consistency with the applicable regulatory requirements (e.g., Federal Land Policy & Management Act [FLPMA], and the CDCA Plan). Impacts/effects associated with the potential effect of the Proposed Action on other existing land uses use are discussed in separate sections of Chapters 3 and 4, and are as follows: Livestock Grazing (Sections 3.7 and 4.7); Mineral Resources (Sections 3.8 and 4.8); Recreation (Sections 3.12 and 4.12); Special Designations (Sections 3.15 and 4.15); and Wild Horses and Burros (Sections 3.20 and 4.20).

4.6.2 CEQA Significance Criteria

The significance criteria for land use and planning listed below *are based on* the CEQA Environmental Checklist, Appendix G of the CEQA Guidelines, and were used to determine if the proposed facility would result in impacts to land use and realty:

- L&R-1: Physically divide an existing community;
- L&R-2: Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including but not limited to the general plan, specific plan, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect;
- L&R-3: Conflict with any applicable habitat conservation plan or natural community conservation plan.

Of these criteria, the following were determined to be inapplicable or to result in no impact under all alternatives and, therefore, these criteria are not discussed further in this section:

L&R-1: The closest community to the proposed facility is Primm, Nevada, which is located approximately 3 miles to the northeast. Therefore, the Proposed Action would not physically divide an existing community.

L&R-3: The proposed facility would not be located within the boundaries of an existing habitat conservation plan or natural community conservation plan. Therefore, there would be no impact under the L&R-3 criterion.

4.6.3 Alternative 1: Proposed Action

The following provides consistency determinations for land use plans, policies, and regulations that are applicable to Alternative 1, the Proposed Action.

Federal Land Policy and Management Act (FLPMA) of 1976

The FLPMA provides the authority to issue a ROW authorization to construct, operate, maintain, and decommission a solar energy project, including: a substation; operations and maintenance facilities; transmission lines; and temporary construction laydown areas. Therefore, electrical generation facilities are an allowable land use under FLPMA and, with issuance of the ROW grant, the Proposed Action would be in compliance with the FLPMA.

California Desert Conservation Area Plan

Conformance with CDCA Plan

The entire site is within the Multiple Use Class (MUC), Limited Use (L), under the BLM's CDCA Plan. As presented in Table 1, Multiple Use Class Guidelines, of the CDCA Plan, solar energy is an allowable use of MUC-L land after NEPA requirements are met. This *PA and* EIS/EIR will act as the mechanism for complying with NEPA requirement.

Additionally, Chapter 3, the "Energy Production and Utility Corridors Element" of the CDCA Plan, requires that newly proposed power facilities that are not already identified in the CDCA Plan be considered through the plan amendment process. The proposed Stateline Solar Farm facility is not currently identified in the CDCA Plan and, therefore, a plan amendment is required to include the facility as a recognized *site location* within the CDCA Plan. As a result, as part of its evaluation of the issuance of a ROW grant for the Proposed Action, the BLM is also considering amending the CDCA Plan to identify the Stateline Solar Farm facility. With such an amendment, the Proposed Action would be in compliance with the CDCA Plan.

Conformance with Multiple Use Class L Guidelines

The Proposed Action would be located within MUC-L lands. The classification designations govern the type and degree of land-use action allowed within the classification area. All land use actions and resource-management activities on BLM-administered lands within a MUC delineation must meet the guidelines for that class. These guidelines are listed on Table 1, MUC Guidelines, of the CDCA Plan (at page 15). MUC-L allows electric generation plants for solar facilities after NEPA requirements are met. The following is a consistency analysis of the Proposed Action for each land use activity:

1. *Agriculture: Agricultural uses of Class L lands are not allowed, with the exception of livestock grazing.* The site is not currently used for agriculture, and the Proposed Action would not involve use of the site for agriculture. *The site is currently used for livestock grazing.*
2. *Air Quality: Class L lands are to be managed to protect their air quality and visibility in accordance with Class II objectives of the Federal Clean Air Act as amended.* The anticipated maximum daily and annual construction emissions that would be associated with the Proposed Action are provided in Tables 4.2-4 and 4.2-5 in Section 4.2 (Air Resources). Both maximum daily and annual construction emissions would occur in 2013. The analysis indicates that, with the exception of NO_x and PM_{10} impacts during construction, the proposed facility would not create new exceedances or contribute to existing exceedances for any of the criteria air pollutants. Maximum annual construction emissions would not exceed any of the applicable general conformity *de minimis* thresholds. The annual operations emissions that would be associated with the Proposed Action are provided in Table 4.2-6 in Section 4.2. Annual operation emissions are anticipated to be well under the general conformity *de minimis* thresholds. The magnitude of the impacts of decommissioning emissions are expected to be substantially less than those estimate for project construction since decommissioning would occur after at least 30 years of operation, and it is expected that on-road and off-road equipment engine technology would be far more advanced and cleaner than is currently the case. Therefore, the Proposed Action would conform to the Class II objectives referenced in the CDCA Plan guidelines.
3. *Water Quality: Class L lands are to be managed to provide for the protection and enhancement of surface and groundwater resources, except for instances of short-term degradation caused by water development projects; BMPs developed by BLM during the*

planning process outlined in the Clean Water Act (CWA) Section 208 will be used to avoid degradation and to comply with Executive Order 12088. The CWA Section 208 and Executive Order 12088 both address federal compliance with pollution control standards. Although BLM has not established BMPs for solar projects, the agency has developed mitigation measures that would be implemented as part of the Proposed Action. Implementation of these mitigation measures, and BLM's standard term and condition requiring compliance with other Federal, state, and local regulations, would ensure that impacts to water resources and water quality would be minimal, and the Proposed Action would conform to the guidelines for MUC-L lands presented in Table 1 of the CDCA Plan.

4. *Cultural and Paleontological Resources: Cultural and paleontological resources will be preserved and protected. Procedures described in 36 CFR 800 will be observed where applicable.* As described in detail in Sections 4.4 and 4.10, impacts on cultural and paleontological resources associated with the development and operation of the Proposed Action would be mitigated and would conform to the MUC Guidelines. Adverse effects on cultural resources listed on or determined to eligible for the National Register of Historic Places would be resolved in accordance with a Memorandum of Agreement being prepared for the project in consultation with the California State Historic Preservation Officer, Native American tribes, and other interested parties in accordance with Section 106 of the NHPA. Identification of the site location for the Proposed Action is subject to the MUC Guidelines for cultural and paleontological resource protection as is evidenced by the applicability of the guidelines to the specific facility proposal. As such, the project site location is within the MUC Guidelines for cultural and paleontological resource protection established by the CDCA Plan.

5. *Native American Values: Native American cultural and religious values will be protected and preserved with appropriate Native American groups consulted.* Consultation with Native American tribes was initiated during project planning and will continue during the NEPA process. Refer to Chapter 5.2 for the details regarding the consultation process. Opportunities have been provided to allow Native American tribes to identify places and resources of importance to them and to express concerns regarding cultural and religious values that could be impacted by the Proposed Action.

   Adverse effects on any places of traditional cultural or religious importance that are identified by tribes will be resolved in accordance with the Memorandum of Agreement being developed for the project with tribal participation. Potential impacts to and protection of cultural resources are discussed in more detail in Section 4.4. Collectively, these measures ensure that preservation and protection of Native American cultural and religious values is accomplished in accordance with the CDCA Plan MUC Guidelines.

6. *Electrical Generation Facilities: Solar generation may be allowed on Class L lands after NEPA requirements are met.* This Plan Amendment and EIS/EIR will act as the mechanism for complying with those NEPA requirements.

7. *Transmission Facilities: New gas, electric, and water transmission facilities and cable for interstate communication may be allowed only within designated corridors, and NEPA requirements must be met.* The Proposed Action would require a 2.3 mile-long, 220 kV gen-tie line that would follow a 150 foot-wide transmission ROW to SCE's proposed Ivanpah Substation. This transmission line would be located within CDCA Utility Corridor BB, which is a designated utility corridor.

8. *Communication Sites: Communication sites may be allowed on Class L lands after NEPA requirements are met.* The Proposed Action would not involve the installation of communications sites.

9. *Fire Management: Fire suppression measures in Class L areas will be taken in accordance with specific fire management plans, subject to such conditions as the authorized officer deems necessary.* The project area is within the area covered by the BLM California Desert District and Needles Field Office Fire Management Plan, 2004. That Plan addresses management and suppression of wildfires, and does not address incidents on specific facilities such as power plants. The applicant has developed fire suppression measures that would be used for the Proposed Action, and these measures are discussed in Section 4.21. Should a fire occur in the area that is not specific to the facility, it would be addressed by BLM, not the Applicant, and it would be addressed in accordance with the Fire Management Plan. Therefore, the Proposed Action would conform to the guideline for Fire Management for MUC-L.

10. *Vegetation:* Table 1 of the CDCA Plan includes a variety of guidelines associated with vegetation, as follows:

    Vegetation Harvesting

    Native Plants – Commercial or non-commercial removal of native plants in Class L areas may be allowed by permit after NEPA requirements are met, and after development of necessary stipulation. Approval of the ROW grant for the Proposed Action would constitute the permit for such removal. The mitigation measures in this *PA and* EIS/EIR and conditions of approval that would be required in the Record of Decision would constitute the stipulations to avoid or minimize impacts from the removal of native plants.

    Harvesting of plants by mechanical means – Harvesting by mechanical means may be allowed by permit only. Although the Proposed Action would include the collection of succulents and seeds to assist with reclamation, the removal of these items would not be done for distribution to the public. Also, the guidelines for vegetation harvesting include encouragement of such harvesting in areas where the vegetation would be destroyed by other actions, which would be the case with the Proposed Action. Therefore, the Proposed Action would be in conformance with this MUC guideline.

    Rare, Threatened, and Endangered Species, State and Federal – In all MUC areas, all state and federally listed species will be fully protected. In addition, actions which may jeopardize the continued existence of federally listed species will require consultation with the U.S. Fish and Wildlife Service. As evaluated in Section 4.17, no Federally or state listed plants would be impacted by the Proposed Action.

    Sensitive Plant Species – Identified sensitive plant species would be given protection in management decisions consistent with BLM's policy for sensitive species management, BLM Manual 6840. The objective of this policy is to conserve and/or recover listed species, and to initiate conservation measures to reduce or eliminate threats to BLM sensitive species to minimize the likelihood of and need for listing. One BLM sensitive plant, the Rusby's desert mallow, has been identified in the Project area, and impacts and mitigation associated with this species are discussed in Section 4.17. In an effort to protect this species, BLM worked with the Applicant to develop mitigation and project alternatives to avoid special status plants. In addition, mitigation measures included in the *PA and* EIS/EIR would reduce the number of individuals of the species that would be affected. Because these measures are intended to reduce threats to this species to minimize the likelihood of listing, these measures are in conformance with the MUC guidance in the CDCA Plan.

    Unusual Plant Assemblages (UPAs) – No UPAs have been identified on the proposed site.

Vegetation Manipulation

Mechanical Control – Mechanical control may be allowed after consideration of possible impacts. Vegetation manipulation is defined in the CDCA Plan as removing noxious or poisonous plants from rangelands; increasing forage production; creating open areas within dense brush communities to favor certain wildlife species; or eliminating introduced plant species. During construction, operations and maintenance, and decommissioning phases, the Applicant would abide by noxious weed control procedures as developed in cooperation with the BLM and San Bernardino County. The establishment of noxious/invasive vegetation can be limited by early detection and eradication. The Applicant would finalize the site-specific Weed Management Plan prior to a ROW grant being issued. Such actions would be conducted as part of the Proposed Action. Weed management under the Weed Management Plan would conform to federal, State, and local regulations.

Chemical Control - Aerial broadcasting application of chemical controls will not be allowed. Noxious weed eradication may be allowed after site-specific planning. The Proposed Action would not include aerial broadcasting. If chemical treatment is applied, it would be consistent with BLM's ROD: Vegetation Treatments Using Herbicides (BLM 2007a), as supported by the Programmatic Environmental Impact Statement (PEIS) for Vegetation Treatments Using Herbicides (BLM 2007b). Specific control measures are described in the Applicant's Plan of Development.

Exclosures - Exclosures may be allowed. Exclosure is a manipulation technique where livestock and certain wildlife species can be excluded from fenced areas. This procedure provides comparison data and is valuable in the determination of grazing effects of vegetation. The Proposed Action would not include exclosures for the purpose of protecting vegetation.

Prescribed Burning – Prescribed burning may be allowed after development of a site-specific management plan. The Proposed Action would not include prescribed burning.

11. *Land Tenure Adjustment: Class L land will not be sold.* The Proposed Action would not involve any sale of BLM-administered lands.

12. *Livestock Grazing: Livestock grazing is allowed subject to the protection of sensitive resources.* The Proposed Action would not involve changes to grazing on Class L lands.

13. *Minerals:* The Proposed Action would not involve the development of minerals on Class L lands.

14. *Motorized Vehicle Access/Transportation: Pursuant to the CDCA Land Use Plan (LUP) guidelines in Class L areas, new roads and ways may be developed under ROW grants or approved plans of operation, and periodic and seasonal closures or limitations of routes of travel may be required.* In areas designated as limited use area for OHV use, such as the site locations under consideration in this *PA and* EIS/EIR, changes to the transportation network (new routes, re-routes, or closures) in "limited" areas may be made through activity-level planning or with site-specific NEPA analysis (IM 2008-014). Modifications to area OHV designations (open, closed, or limited) require amendment to the RMP. There are no area OHV designations that are being made or modified through the Proposed Action or any of the alternatives. With the Proposed Action, existing routes are being closed, and new routes are being created in limited OHV areas. As such, these changes may be made with site-specific NEPA analysis. This analysis is provided in Section 4.16. The access needs for the proposed solar facility do not substantially differ among the various action alternatives presented in the *PA and*

EIS/EIR. For any of the action alternatives, the ROW grant for the Project grants would include the approval of roads that allow for site access. This activity falls within the CDCA LUP guideline noted above.

15. *Recreation:* The Proposed Action would not involve the use of the proposed facility site for recreational uses.

16. *Waste Disposal:* The Proposed Action would not involve the development of waste disposal sites.

17. *Wildlife Species and Habitat:* Table 1 of the CDCA Plan includes a variety of guidelines associated with wildlife, as follows:

    Rare, Threatened, and Endangered Species, State and Federal – In all MUC areas, all state and federally listed species and their critical habitat will be fully protected. In addition, actions which may jeopardize the continued existence of federally listed species will require consultation with the U.S. Fish and Wildlife Service in accordance with Section 7 of the Endangered Species Act. As evaluated in Section 4.22, Wildlife Resources, the desert tortoise, which is listed as federally and state threatened, would be potentially affected by the Proposed Action. As specified in the guideline, BLM will initiate formal consultation with the USFWS in accordance with Section 7 of the Endangered Species Act. BLM has worked with USFWS, California Department of Fish and Wildlife (CDFW), and the Applicant to develop protection and compensation measures for the desert tortoise. Therefore, the Proposed Action would comply with the guideline to provide full protection of the species.

    Sensitive Species – Identified species would be given protection in management decisions consistent with BLM's policy for sensitive species management, BLM Manual 6840. The objective of this policy is to conserve and/or recovered listed species, and to initiate conservation measures to reduce or eliminate threats to BLM sensitive species to minimize the likelihood of and need for listing. No BLM sensitive wildlife species (other than the desert tortoise, identified and discussed in the previous paragraph) are present on the site of the Proposed Action.

    Predator and Pest Control – Control of depredation wildlife and pests will be allowed in accordance with existing State and federal laws. The Proposed Action would include a Raven Control Plan for the depredation on the desert tortoise. Therefore, this guideline is applicable to the Proposed Action, but is allowed subject to conformance with State and federal laws.

    Habitat Manipulation – The Proposed Action would not include habitat manipulation.

    Reintroduction or Introduction of Established Exotic Species – The Proposed Action would not include the reintroduction or introduction of exotic species.

18. *Wetland/Riparian Areas:* No wetland or riparian areas are present on the site of the Proposed Action.

19. *Wild Horses and Burros: Under the CDCA Plan guidelines, populations of wild and free-roaming horses and burros will be maintained in healthy, stable herds, but will be subject to controls to protect sensitive resources.* As discussed in Section 4.20, no wild and free-roaming horses are present in the project area. In the Northern and Eastern Mojave Desert Management Plan (NEMO Plan) Amendments, BLM established the appropriate management level (AML) for burros in the vicinity of the Proposed Action at zero. Therefore, the Proposed Action would conform to the requirements of the guidelines in the CDCA Plan.

4.6.3.1 Direct and Indirect Impacts

Construction

As discussed in Section 3.6, current authorized uses of the proposed facility site include grazing, designated utility corridors, open routes of travel, and two groundwater production wells (with associated road access, power transmission, and water pipeline) operated by Primm. Construction of the Proposed Action would require fencing of the project area and restricting access to only authorized users. *The impact of the Proposed Action on the grazing use of the site is discussed in Section 4.7. The re-routing of the groundwater pipeline would be an adverse impact on the operator of that pipeline.* Because *the open routes* would be re-routed around the site, the impact of restricting access *to* users *of these routes* would be minimal. Any impacts associated with this restriction of access would be *long-term*, continuing throughout the construction and operations and maintenance phases of the project. Mitigation measure MM-Lands-1 would require the Applicant to minimize disturbance of existing land uses through coordination with the authorized users.

Utility Corridors

The Energy Production and Utility Corridors Element of the CDCA Plan includes the full implementation of a network of planning corridors to meet the projected utility needs, the identification of environmental constraints and siting procedures, and the identification of potential sites for geothermal development, wind energy parks, and power plants. Sixteen planning corridors were identified in the CDCA Plan, and the proposed Stateline Solar Farm site partially overlaps two designated Utility Corridors (D and BB). The corridors are intended to include new electrical transmission lines of 161 kV or above, all pipelines with diameters greater than 12 inches, cables for interstate communications, and major aqueducts or canals for inter-basin transfers of water. The corridors vary in width from two to five miles.

As shown in Figure 1-3, the entirety of the proposed facility would be located within existing Utility Corridors D and BB. At the location where Interstate 15 crosses the California-Nevada border, several designated utility corridors converge. From the southwest, two separate branches of Corridor BB converge and meet at the Primm Valley Golf Course location. Corridor BB then converges with Corridor D, coming in from the west, north of the golf course. Corridor BB in this location is also designated as the West-Wide Energy Corridor 225-27. The proposed facility would be located entirely within the footprint of these corridors where they converge on the north side of the golf course. The land area for the proposed facility would cover approximately 1.7 miles (81 percent) of the 2-mile width of Corridor D, leaving 0.3 miles available for future uses. The proposed facility would also cover 0.95 miles (42 percent) of the 2.25-mile width of Corridor BB. Although the proposed facility would result in limiting the available area within these corridors, future linear facilities could still be placed in the remaining portions of these corridors.

This may result in eliminating potential future uses of the affected portions of Utility Corridors D and BB for linear right-of-way projects because buried or overhead utilities could not be constructed across the site without removing solar panels and interfering with facility operations. The partial loss of constructable space within Utility Corridors D and BB as attributable to the Proposed Action would be a direct, adverse impact. However, there would be some remaining opportunity to route future utility lines within the remaining portions of the corridors not impacted by the Project.

Open Routes

The proposed facility area includes three routes of travel designated by BLM as open routes. These routes include route 699226 (1.8 miles encompassed by the Proposed Action), 699198 (2.0 miles), and 699238 (1.4 miles). A total of 5.2 miles of existing open routes would be impacted under the Proposed Action. If the Proposed Action is implemented, then the portions of these routes within the fenced project area would be closed. In their place, the Applicant would re-direct the routes outside of the perimeter of the fenced facility, and BLM would authorize the re-directed roads as open routes. The locations of the current routes and the proposed location for the re-routed roads are presented in Figure 4.6-1.

Water Production Wells

The proposed facility area includes an existing ROW, held by Primmadonna Company, LLC (Primmadonna), which is used as the location of two groundwater supply wells designated WP-5 and WP-6. In addition to the wells, the ROW includes associated access roads, power lines, and a water pipeline. The wells supply water to the hotels and casinos at Primm, and to the NV Energy Walter Higgins Power Generating Station.

If the Proposed Action is implemented, the Applicant would be required to accommodate the existing ROW for water production held by Primmadonna. In their Plan of Development, the Applicant proposes to re-route the water pipeline and access road that support the existing groundwater wells. Prior to being issued a ROW, the Applicant would need to acquire a letter from Primmadonna indicating that Primmadonna had no objection to the proposed changes to the road and pipeline associated with their water well, or to the issuance of a ROW grant to the Desert Stateline facility. The locations of the current pipeline, transmission line, and access road, and the proposed location for these facilities as they would be re-routed by the Applicant, are presented in Figure 4.6-1.

Desert Express ROW

The right-of-way for the Desert Xpress high speed train passes through the Project Study Area. However, it is not included within the footprint of any of the evaluated project alternatives. Therefore, there is no conflict with the Desert Xpress ROW.

Operation and Maintenance

As discussed above, potential land use impacts associated with the Proposed Action would occur as a result of the fencing of the project area and restriction of site access. This restriction would begin during construction, and would be maintained during the operations phase. Therefore, the impacts associated with operation and maintenance of the facility would be the same as those discussed for construction. No additional impacts would be associated with operations and maintenance.

Decommissioning

The activities associated with decommissioning would generally occur within the same fenced area as project construction and operations. No further land use would be associated with decommissioning, so no additional impacts to existing land uses or conflicts with land use plans and regulations would occur. Land use plans, policies, or regulations may have changed by the time the Proposed Action would be decommissioned. Therefore, mitigation measure MM-

Lands-2 would be required to ensure that decommissioning in conducted in accordance with then-current land use plans, policies, and regulations.

After the Proposed Action has been decommissioned, the land may be used again for multiple uses such as mining, grazing, recreation, or open space without any of the restrictions associated with the construction and operations phases. This change would be a beneficial impact for other users of the site at that time.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the existing Ivanpah DWMA would have an effect on future land uses that are authorized within the land area that is added to the DWMA. Under Alternative 1, the land area that would be *affected by the DWMA modification* is shown in Table 4.6-1.

Table 4.6-1. Acreage to be Modified in Ivanpah DWMA, Alternative 1

Land Area	Acreage in Land Area
Current Ivanpah DWMA	37,280 ac
Total in Northern Ivanpah Unit	+ 29,110 ac
Ivanpah SEGS	-3,471 ac
Caltrans JPOE	-133 ac
Stateline Alternative 1	-2,143 ac
Subtotal New Acreage Added to DWMA	***23,363* ac**
Removal of Ivanpah Playa	-2,997 ac
Final Total in Modified DWMA	***57,646* ac**

The establishment of the Ivanpah DWMA in the NEMO plan amendments (BLM 2002) specified the following land use restrictions within the DWMA:

- Additional cumulative surface disturbance within the DWMA is limited to 1 percent of the total area of the DWMA;
- The desert tortoise compensation ratio for projects within the DWMA is established at a ratio of 5:1;
- Stopping, parking, and camping within the DWMA is limited to disturbed areas within 100 feet of the centerline of open routes;
- Washes are closed to vehicle traffic unless specifically designated as open routes;
- A variety of limitations are applied to grazing activities within the DWMA.

As part of Alternative 1, these land use restrictions would be extended to the newly added acreage. Because modification of the boundary of the Ivanpah DWMA would be accomplished through a CDCA Plan amendment, the action of modifying the boundary would conform to the CDCA Plan.

4.6.3.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) are presented below based on the CEQA Significance Criteria. Only those significance criteria which were determined to be relevant to the project are addressed below:

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Construction

With the approval of a ROW grant and plan amendment, construction of the Proposed Action would not conflict with the FLPMA or the CDCA Plan. All components of the Proposed Action that would affect land uses, including the ROW grant itself, modification of open route designations, and modification of the boundaries of the Ivanpah DWMA, would be done in a manner that complies with FLPMA requirements for issuing ROW grants, and that conforms to the CDCA Plan. Amendments to the CDCA Plan required in connection with the issuance of any ROW grant for the Project or alternatives would amend the CDCA Plan to identify the Project as a recognized *site location* of the plan; modify open route designations; and modify the boundaries of the Ivanpah DWMA would be done. Since such amendments would be done in accordance with the procedures specified in Chapter 7 of the CDCA Plan for amendment of the plan, impacts to lands and realty would be less than significant.

Operation and Maintenance

Conflicts with the applicable plans, policies, and regulations would be the same as discussed under “Construction”.

Decommissioning

Land use plans, policies, or regulations may have changed by the time the proposed facility would be decommissioned. As such, mitigation measures MM-Lands-2 requires that the decommissioning plan shall ensure that decommissioning is conducted in accordance with then-current land use plans, policies, or regulations. With implementation of this measure, the decommissioning of the solar facility would not conflict with applicable plans, policies, or regulations, and impacts would be less than significant.

4.6.4 Alternative 2: 2,385 Ac Alternative

4.6.4.1 Direct and Indirect Impacts

Alternative 2 is conceptually similar to the Proposed Action (Alternative 1), but would be placed within a different land area which comprises 2,385 ac. The land area associated with Alternative 2 would partially overlap with the land area associated with the Proposed Action north of the Primm Valley Golf Course, but would also include a parcel on the south side of the Primm Valley Golf Course.

The conformance of Alternative 2 with the FLPMA and the CDCA Plan, including the MUC Guidelines in Table 1 of the CDCA Plan, would be the same as discussed under Alternative 1.

Construction

During construction of Alternative 2, potential impacts to lands and realty would be substantially similar to those described under “Construction” for Alternative 1, although occurring in a slightly different area. Construction of Alternative 2 would also require fencing of the project area and restricting access to only authorized users. Any impacts associated with this restriction of access would be *long-term*, continuing throughout the construction and operations and maintenance phases of the project. Mitigation measure MM-Lands-1 would require the Applicant to minimize disturbance of existing land uses through coordination with the owners.

Utility Corridors

Impacts to Utility Corridors BB and D would be similar to those for the Proposed Action. The entirety of the northern portion of the bifurcated footprint would be located within existing Utility Corridors D and BB. The southern portion of the bifurcated footprint would be located almost entirely within Corridor BB at the location where the two separate branches of Corridor BB converge southwest of the golf course. The land area for the northern portion would cover approximately 1.0 miles (48 percent) of the 2-mile width of Corridor D, and 0.95 miles (42 percent) of the 2.25-mile width of Corridor BB. The land area for the southern portion would cover 0.7 miles (35 percent) of the northern branch of Corridor BB, and 0.6 miles (28 percent) of the southern branch of Corridor BB. Overall, Alternative 2 would cover a much smaller portion of Corridor D than the Proposed Action, leaving a 1-mile width of Corridor D open to future uses.

Open Routes

Impacts to existing open routes of travel associated with Alternative 2 would be reduced from those associated with the Proposed Action. The northern portion of the bifurcated footprint of the Alternative 2 project area includes two routes of travel designated by BLM as open routes. These routes include route 699198 (1.6 miles encompassed by the Alternative 2 project area) and 699238 (1.3 miles). The southern portion of the bifurcated footprint would not impact any open routes. A total of 2.9 miles of existing open routes would be impacted under Alternative 2. Similar to the Proposed Action, the portions of these routes within the fenced project area would be closed under Alternative 2. In their place, the Applicant would re-direct the routes outside of the perimeter of the fenced facility, and BLM would authorize the re-directed roads as open routes. The locations of the current routes and the proposed location for the re-routed roads are presented in Figure 4.6-2.

Water Production Wells

The project area associated with Alternative 2 would not enclose the existing groundwater production well, water pipeline, and access roads which are operated under BLM ROW by Primmadonna. Therefore, Alternative 2 would not create any conflict with the existing Primmadonna ROW.

Desert Express ROW

The right-of-way for the Desert Xpress high speed train passes through the Project Study Area. However, it is not included within the footprint of any of the evaluated project alternatives. Therefore, there is no conflict with the Desert Xpress ROW.

Operation and Maintenance

As discussed above under “Construction”, potential land use impacts associated with Alternative 2 would occur as a result of the fencing of the project area and restriction of site access. This restriction would begin during construction, and would be maintained during the operations phase. As with the construction phase, the potential conflict with the current ROW held by Primmadonna for groundwater production would not occur under Alternative 2. No additional impacts would be associated with operations and maintenance.

Decommissioning

During the decommissioning of this alternative, potential impacts to lands and realty would be the same as described under "Decommissioning" for Alternative 1.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be similar under Alternative 2 as Alternative 1, except it would include a different land area. Under Alternative 2, the land area that would be ***affected by the DWMA modification*** is shown in Table 4.6-2.

Table 4.6-2. Acreage to be Modified in Ivanpah DWMA, Alternative 2

Land Area	Acreage in Land Area
Current Ivanpah DWMA	37,280 ac
Total in Northern Ivanpah Unit	+ 29,110 ac
Ivanpah SEGS	-3,471 ac
Caltrans JPOE	-133 ac
Stateline Alternative 2	-2,385 ac
Subtotal New Acreage Added to DWMA	***23,121* ac**
Removal of Ivanpah Playa	-2,997 ac
Final Total in Modified DWMA	***57,404* ac**

As part of Alternative 2, the land use restrictions discussed as part of the Proposed Action would be applied to the newly added acreage.

Because modification of the boundary of the Ivanpah DWMA would be accomplished through a CDCA Plan amendment, the action of modifying the boundary would conform to the CDCA Plan.

4.6.4.2 CEQA Significance Determinations

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The CEQA significance determinations of lands and realty for Alternative 2 would be identical to those for Alternative 1.

4.6.5 *Revised* Alternative 3: *1,685* Ac Alternative

4.6.5.1 Direct and Indirect Impacts

Revised Alternative 3 is conceptually similar to the Proposed Action (Alternative 1), but would be placed within a different land area which comprises *1,685* ac. The land area associated with *Revised* Alternative 3 would partially overlap with the land area associated with the Proposed Action, but would be shifted towards the south and east.

The conformance of *Revised* Alternative 3 with the FLPMA and the CDCA Plan, including the MUC Guidelines in Table 1 of the CDCA Plan, would be the same as discussed under Alternative 1.

Construction

During construction of *Revised* Alternative 3, potential impacts to lands and realty would be similar to those described under "Construction" for Alternative 1. Construction of *Revised*

Alternative 3 would also require fencing of the project area and restricting access to only authorized users. Any impacts associated with this restriction of access would be *long-term*, continuing throughout the construction and operations and maintenance phases of the project. Mitigation measure MM-Lands-1 would require the Applicant to minimize disturbance of existing land uses through coordination with the owners.

Utility Corridors

Impacts to Utility Corridors BB and D would be similar to those for the Proposed Action. The land area for *Revised* Alternative 3 would cover approximately 1.7 miles (81 percent) of the 2-mile width of Corridor D, leaving 0.3 miles available for future uses. *Revised* Alternative 3 would also cover 0.95 miles (42 percent) of the 2.25-mile width of Corridor BB. Although the proposed facility would result in limiting the available area within these corridors, future linear facilities could still be placed in the remaining portions of these corridors.

Open Routes

Impacts to existing open routes of travel associated with *Revised* Alternative 3 would be the same as those associated with the Proposed Action. These routes include route 699226 (1.9 miles encompassed by *Revised* Alternative 3), 699198 (2.0 miles), and 699238 (1.3 miles). A total of 5.2 miles of existing open routes would be impacted under *Revised* Alternative 3. Under *Revised* Alternative 3, the portions of these routes within the fenced project area would be closed. In their place, the Applicant would re-direct the routes outside of the perimeter of the fenced facility, and BLM would authorize the re-directed roads as open routes. The locations of the current routes and the proposed location for the re-routed roads are presented in Figure 4.6-3.

Water Production Wells

Revised Alternative 3 would have no impact on the existing groundwater production well, water pipeline, and access roads which are operated under BLM ROW by Primmadonna. *The layout of the alternative was specifically developed, in coordination with Primmadonna, to avoid their existing infrastructure. Although solar arrays would be placed both north and south of the pipeline and access road, the security fence would be bifurcated to avoid placement of solar arrays within the pipeline corridor, and to allow Primmadonna to continue unhindered use of the access road. The fence would have gates on both sides of the access road to allow the applicant's construction and operations vehicles to cross the pipeline and access road when passing between the northern and southern portions of the site. The electrical connection between the two portions of the site would be made by an overhead transmission line which would be high enough to allow traffic to pass underneath on the access road.*

Desert Express ROW

The right-of-way for the Desert Xpress high speed train passes through the Project Study Area. However, it is not included within the footprint of any of the evaluated project alternatives. Therefore, there is no conflict with the Desert Xpress ROW.

Operation and Maintenance

As discussed above under "Construction", potential land use impacts associated with *Revised* Alternative 3 would occur as a result of the fencing of the project area and restriction of site access. This restriction would begin during construction, and would be maintained during the operations phase. No additional impacts would be associated with operations and maintenance.

Decommissioning

During the decommissioning of this alternative, potential impacts to lands and realty would be the same as described under "Decommissioning" for Alternative 1.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be similar under *Revised* Alternative 3 as Alternative 1, except it would include a slightly different land area. Under *Revised* Alternative 3, the land area that would be *affected by the DWMA modification* is shown in Table 4.6-3.

Table 4.6-3. Acreage to be Modified in Ivanpah DWMA, *Revised* Alternative 3

Land Area	Acreage in Land Area
Current Ivanpah DWMA	37,280 ac
Total in Northern Ivanpah Unit	+ 29,110 ac
Ivanpah SEGS	-3,471 ac
Caltrans JPOE	-133 ac
Stateline *Revised* Alternative 3	*-1,685* ac
Subtotal New Acreage Added to DWMA	***23,821* ac**
Removal of Ivanpah Playa	-2,997 ac
Final Total in Modified DWMA	***58,104* ac**

As part of *Revised* Alternative 3, the land use restrictions discussed as part of the Proposed Action would be applied to the newly added acreage.

Because modification of the boundary of the Ivanpah DWMA would be accomplished through a CDCA Plan amendment, the action of modifying the boundary would conform to the CDCA Plan.

4.6.5.2 CEQA Significance Determinations

L&R-2

The CEQA significance determinations of lands and realty for *Revised* Alternative 3 would be identical to those for Alternative 1.

4.6.6 Alternative 4: Reduced Acreage Alternative

4.6.6.1 Direct and Indirect Impacts

Alternative 4 is conceptually similar to the Proposed Action (Alternative 1), but would be placed within a different land area which comprises 1,766 ac. The land area associated with Alternative 4 would be the same as the northern portion of the bifurcated footprint of Alternative 2. The conformance of Alternative 4 with the FLPMA and the CDCA Plan, including the MUC Guidelines in Table 1 of the CDCA Plan, would be the same as discussed under Alternative 1.

Construction

During construction of Alternative 4, potential impacts to lands and realty would be similar to those described under "Construction" for Alternative 1, however lesser in magnitude given the smaller size of the Project configuration under Alternative 4. Construction of Alternative 4 would also require fencing of the project area and restricting access to only authorized users. Any impacts associated with this restriction of access would be *long-term*, continuing throughout the construction and operations and maintenance phases of the project. Mitigation measure MM-Lands-1 would require the Applicant to minimize disturbance of existing land uses through coordination with the owners.

Utility Corridors

Impacts to Utility Corridors BB and D would be similar to those for the Proposed Action. The entirety of the footprint for Alternative 4 would be located within existing Utility Corridors D and BB. The land area for the footprint would cover approximately 1.0 miles (48 percent) of the 2-mile width of Corridor D, and 0.95 miles (42 percent) of the 2.25-mile width of Corridor BB. Overall, Alternative 4 would cover a much smaller portion of Corridor D than the Proposed Action, leaving a 1-mile width of Corridor D open to future uses.

Open Routes

Impacts to existing open routes of travel associated with Alternative 4 would be the same as those for Alternative 2. The Alternative 4 project area includes two routes of travel designated by BLM as open routes. These routes include route 699198 (1.6 miles encompassed by the Alternative 4 project area) and 699238 (1.3 miles). A total of 2.9 miles of existing open routes would be impacted under Alternative 4. Similar to the Proposed Action, the portions of these routes within the fenced project area would be closed under Alternative 4. In their place, the Applicant would re-direct the routes outside of the perimeter of the fenced facility, and BLM would authorize the re-directed roads as open routes.

Water Production Wells

The project area associated with Alternative 4 would not enclose the existing groundwater production well, water pipeline, and access roads which are operated under BLM ROW by Primmadonna. Therefore, Alternative 4 would not create any conflict with the existing Primmadonna ROW.

Desert Express ROW

The right-of-way for the Desert Xpress high speed train passes through the Project Study Area. However, it is not included within the footprint of any of the evaluated project alternatives. Therefore, there is no conflict with the Desert Xpress ROW.

Operation and Maintenance

As discussed above under "Construction", potential land use impacts associated with Alternative 4 would occur as a result of the fencing of the project area and restriction of site access. This restriction would begin during construction, and would be maintained during the operations phase. As with the construction phase, the potential conflict with the current ROW

held by Primmadonna for groundwater production would not occur under Alternative 4. No additional impacts would be associated with operations and maintenance.

Decommissioning

During the decommissioning of this alternative, potential impacts to lands and realty would be the same as described under "Decommissioning" for Alternative 1.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be similar under Alternative 4 as Alternative 1, except it would include a different land area. Under Alternative 4, the land area that would be *affected by the DWMA modification* is shown in Table 4.6-4.

Table 4.6-4. Acreage to be Modified in Ivanpah DWMA, Alternative 4

Land Area	Acreage in Land Area
Current Ivanpah DWMA	37,280 ac
Total in Northern Ivanpah Unit	+ 29,110 ac
Ivanpah SEGS	-3,471 ac
Caltrans JPOE	-133 ac
Stateline Alternative 4	-1,766 ac
Subtotal New Acreage Added to DWMA	***23,740* ac**
Removal of Ivanpah Playa	-2,997 ac
Final Total in Modified DWMA	***58,023* ac**

As part of Alternative 4, the land use restrictions discussed as part of the Proposed Action would be applied to the newly added acreage.

Because modification of the boundary of the Ivanpah DWMA would be accomplished through a CDCA Plan amendment, the action of modifying the boundary would conform to the CDCA Plan.

4.6.6.2 CEQA Significance Determinations

L&R-2

The CEQA significance determinations of lands and realty for Alternative 4 would be identical to those for Alternative 1. Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

4.6.7 Alternative 5: No Action Alternative

4.6.7.1 Direct and Indirect Impacts

Under this alternative, the BLM would not approve the proposed facility and would not amend the CDCA Plan. As a result, no solar energy project would be constructed, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. As a result, none of the impacts to lands and realty from construction and operation of the Project would occur.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under this alternative. Land uses associated with the Ivanpah DWMA would continue as they are today.

4.6.7.2 CEQA Significance Determinations

Because the actions taken, or not taken, under Alternative 5 would be done in a manner that complies with FLPMA, and would conform to the CDCA Plan, there would be no lands and realty impacts under Alternative 5.

4.6.8 Alternative 6: No Project, Exclude Solar Alternative

4.6.8.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. As a result, no solar energy project would be constructed on the site, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because the CDCA Plan would be amended to make the area unavailable for future solar energy development, it is expected that the site would remain in its existing condition unless another use is designated in this amendment. As a result, access to the site would not change and existing land uses would continue without any disruptions from construction of solar energy facilities. As such, this No Project Alternative would have no adverse impact on lands and realty within and adjacent to the site in the long-term.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be similar under Alternative 6 as Alternative 1, except it would include a different land area. Under Alternative 6, the land area that would be added to the DWMA is shown in Table 4.6-5.

Table 4.6-5. Acreage to be Modified in Ivanpah DWMA, Alternative 6

Land Area	*Acreage in Land Area*
Current Ivanpah DWMA	*37,280 ac*
Total in Northern Ivanpah Unit	*+ 29,110 ac*
Ivanpah SEGS	*-3,471 ac*
Caltrans JPOE	*-133 ac*
Stateline Solar Project	*0 ac*
Subtotal New Acreage Added to DWMA	***25,506 ac***
Removal of Ivanpah Playa	*-2,997 ac*
Final Total in Modified DWMA	***59,789 ac***

As part of Alternative 6, the land use restrictions discussed as part of the Proposed Action would be applied to the newly added acreage.

Because modification of the boundary of the Ivanpah DWMA would be accomplished through a CDCA Plan amendment, the action of modifying the boundary would conform to the CDCA Plan.

4.6.8.2 CEQA Significance Determinations

Because the actions taken under Alternative 6 would be done in a manner that complies with FLPMA, and would conform to the CDCA Plan, there would be no lands and realty impacts under Alternative 6.

4.6.9 Alternative 7: No Project, Approve Solar Alternative

4.6.9.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The Stateline Solar Farm Project would not be constructed on the project site and the project site would remain vacant in the near-term. Under this alternative, the BLM would not approve the proposed facility, but would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the site.

If this were to occur, it is likely that the construction and operations impacts to lands and realty would be similar to those identified for the Proposed Action.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 7. Land uses associated with the Ivanpah DWMA would continue as they are today.

4.6.9.2 CEQA Significance Determinations

Because the actions taken under Alternative 7 would be done in a manner that complies with FLPMA, and would conform to the CDCA Plan, there would be no lands and realty impacts under Alternative 7.

4.6.10 Cumulative Impacts

4.6.10.1 Geographic Extent/Context

The geographic scope for the analysis of cumulative impacts related to lands and realty are the local and regional communities and sensitive receptors. Cumulative impacts to lands and realty could result from the physical division of an established community, or from conflicts with any applicable land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating environmental impacts. Therefore, this analysis includes the renewable energy projects within the Ivanpah Valley area which may incur similar impacts to the existing onsite land uses and the surrounding communities, and which would also have to undergo a similar consistency analysis for plans, policies, and regulations as the proposed Stateline Solar Farm facility.

4.6.10.2 Existing Cumulative Conditions

Past and present projects occurring in the vicinity of the proposed facility include recreational activities; mining; solar development; utility corridors used for transmission of electric power, natural gas, petroleum products and communications; transportation infrastructure (highway and railroad, both existing and proposed); and grazing.

4.6.10.3 Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects, various BLM authorized actions/activities, proposed or approved projects within the County's jurisdiction, and other actions/activities that the agencies consider reasonably foreseeable. Table 4.1-2 summarizes the cumulative projects that would have the potential to combine with the Proposed Action and result in cumulative impacts to lands and realty. Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA, or will do so prior to approval. Even if environmental review has not been completed for the cumulative projects described in Table 4.1-2, their effects were considered in the cumulative impacts analysis in the *PA and* EIS/EIR.

Projects currently under construction in the vicinity of the proposed facility include the Ivanpah SEGS solar facility (3,471 acres), and expansion of the Molycorp Minerals, LLC rare earths mine. Proposed projects in the vicinity of the proposed facility that would have potentially adverse impacts to lands and realty include the Southern Nevada Supplemental Airport, Desert Xpress high speed passenger rail line, Silver State Phase 2 solar facility, and the Calnev Pipeline Expansion Project.

4.6.10.4 Cumulative Impacts Associated with Proposed Action

Construction

The proposed developments near the project site that would have the potential to induce cumulative impacts to lands and realty include thousands of acres of renewable energy generation projects that would have the potential to conflict with existing land uses. It is expected that one or more of the cumulative projects described above may be under construction at the same time as the Proposed Action. In particular, construction of the Ivanpah SEGS facility and the Calnev Pipeline Expansion Project are expected to occur in 2013. As a result, there may be short-term impacts during construction of these cumulative projects to lands and realty. However, in consideration of cumulative land use compatibility impacts, the implementation of renewable projects in southern California and Nevada would occur mostly in undeveloped desert lands or areas of rural development (refer Sections 4.8, 4.12, and 4.15 for cumulative impacts associated with mineral resources, recreation, and lands under special designations, respectively), and would not create physical divisions of established residential communities. In addition, these projects would be constructed in accordance with BLM's CDCA Plan, BLM's land use plans applicable to the portion of Ivanpah Valley in southern Nevada, and the San Bernardino County General plan and the applicable land use plan for Clark County, Nevada as applicable.

Operation and Maintenance

It is expected that all of the cumulative projects described above would be operational at the same time as the Proposed Action. As a result, there may be long-term impacts during operation of those cumulative projects related to lands and realty.

The Proposed Action would contribute to these possible long-term operational cumulative impacts since thousands of acres of land are proposed for solar energy and other developments in the Ivanpah Valley area. The conversion of these lands would preclude numerous existing land uses including recreation, wilderness, rangeland, and open space for the *long-term* duration of the operation of those projects. Because the Proposed Action would

preclude certain land uses on the 2,143 acre project footprint, operation of the Proposed Action would contribute to this reduction in land available for these other uses.

Decommissioning

The decommissioning of the Proposed Action is expected to result in adverse impacts similar to those identified for construction. Disruptions from the decommissioning activities associated with other renewable energy and other projects would have the potential to combine with those of the Proposed Action, which could result in an adverse cumulative impact. However, the Proposed Action's contribution to cumulative impacts to lands and realty during decommissioning would be temporary. Following decommissioning in accordance with the Applicant's Decommissioning Plan (First Solar 2012d), the land area associated with the Proposed Action would again become available for other uses, and adverse impacts associated with the project would cease.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the existing Ivanpah DWMA would have an effect on future land uses that are authorized within the newly added portions of the DWMA. The land use restrictions that are currently applied to the 37,280 acre Ivanpah DWMA, which are discussed as part of the evaluation of the Proposed Action, would be extended to cover an additional *23,363* acres within the Northern Ivanpah Valley Unit. These land use restrictions include a cumulative 1 percent total surface area disturbance within the DWMA. Therefore, the action of modifying the boundary of the DWMA would further restrict land uses within the applicable portion of the Ivanpah Valley. Because modification of the boundary of the Ivanpah DWMA would be accomplished through a CDCA Plan amendment, the action of modifying the boundary would conform to the CDCA Plan.

4.6.10.5 CEQA Significance Determinations

L&R-2

Because the Proposed Project, current projects, and reasonably foreseeable future projects have been, and would be, considered by the agencies within the context of the CDCA Plan, San Bernardino County General Plan, and other applicable land use plans, policies, and regulations, the Proposed Action would not contribute to adverse cumulative effects on lands and realty.

4.6.10.6 Alternatives

Alternative 2: 2,385 Ac Alternative

The land use associated with Alternative 2 would be approximately the same as that associated with the Proposed Action. Therefore, the cumulative impacts associated with Alternative 2 would be the same as those described above for the Proposed Action.

***Revised* Alternative 3: *1,685* Ac Alternative**

The land use associated with *Revised* Alternative 3 would be approximately the same as that associated with the Proposed Action. Therefore, the cumulative impacts associated with *Revised* Alternative 3 would be the same as those described above for the Proposed Action.

Alternative 4: Reduced Acreage Alternative

The land use associated with Alternative 4 would be reduced from those associated with the Proposed Action. Therefore, the cumulative impacts associated with Alternative 4 would be reduced from those described above for the Proposed Action.

Alternative 5: No Action Alternative

Alternative 5, the No Action Alternative, would not contribute to cumulative impacts to existing land uses.

Alternative 6: No Project, Exclude Solar Alternative

By denying the solar energy application, Alternative 6 would allow existing land uses to continue on the project site as they are today. Therefore, this alternative would not contribute to impacts associated with the removal of the 2,143 acre Proposed Action footprint from other land uses. However, by excluding the proposed facility area from future solar development, Alternative 6 would contribute incrementally to the reduction in the amount of land area available for renewable energy development.

Alternative 7: No Project, Approve Solar Alternative

By denying the solar energy application, Alternative 7 would allow existing land uses to continue on the project site as they are today. In addition, Alternative 7 would not include any management actions that restrict future uses of the site. Therefore, Alternative 7 would not contribute to cumulative impacts to lands and realty.

4.6.11 Mitigation Measures

MM-Lands-1: The project shall be designed to accommodate existing uses, including the Primm groundwater wells and pipeline. If disturbance or modification of existing uses were necessary, the Applicant shall coordinate with the owners to determine an acceptable solution. Any such solutions/agreements shall be prepared in writing and submitted to the BLM and County.

MM-Lands-2: The Decommissioning Plan shall ensure compliance with all applicable federal, State, and local plans, policies, and regulations at the time of decommissioning.

4.6.12 Residual Impacts After Mitigation

There would be no adverse, unavoidable impacts to lands and realty as a result of construction, operation and maintenance, or decommissioning of the Proposed Action.

4.7 Livestock Grazing

4.7.1 Methodology for Analysis

This section evaluates *the impacts of* the Proposed Action and alternatives*. It also evaluates the compliance of the Proposed Action and alternatives* with the applicable laws and regulations pertaining to *livestock* grazing.

4.7.2 CEQA Significance Criteria

CEQA does not provide specific significance criteria for impacts to livestock grazing. Consequently, no CEQA significance determinations have been made for the analysis of livestock grazing impacts below.

4.7.3 Alternative 1: Proposed Action

Impacts to livestock grazing associated with the Proposed Action would occur as a result of the conversion of the Project site to an industrial use. This section also evaluates the potential for solar farm-related construction, operations and maintenance, and decommissioning activities to impact grazing activities on properties adjacent to the project area.

4.7.3.1 Direct and Indirect Impacts

Fencing of the project area and construction and operation of a solar facility would preclude future use of *that portion of the Clark Mountain Grazing Allotment within the Project site* for grazing for the duration of the Project. Pursuant to 43 CFR 4100, Section 4110.4-2 (b) when grazed public lands within allotments, or smaller portions, are disposed of or devoted to a public purpose other than livestock grazing, adjustments to the grazing lease's active use AUMs may have to be made to reflect the loss of available livestock forage from that area. According to the applicable regulations 43 CFR 4110.4-2(b), BLM is required to provide permittees and lessees with 2 year's prior notification before such changes are made. In the case of the Clark Mountain Grazing Allotment, the leaseholder was notified by certified letter on October 19, 2011, that the land is being considered for another purpose that could result in a partial or complete reduction in the leaseholders permitted use of the affected area. *On February 21, 2013, the lessee signed a waiver allowing BLM to cancel, in whole or part, the lease as a result of the proposed alternative land use.* If the Proposed Action is approved, then the 2,143 ac associated with the Project's ROW grant would be devoted to another public purposes and unavailable for grazing for the duration of the project. This reduction in acreage may impact the number of acres available for grazing the AUMs.

For purposes of this NEPA analysis, it is assumed that the Proposed Action would cause 2,143 ac of land within the Clark Mountain Allotment to been unavailable for grazing. Assuming AUMs are distributed proportionally across the allotment, such a reduction would translate to roughly 33 AUMs. This is a conservative estimate of the Project's impact on grazing because, as explained in Chapter 3, the lands within the Project site have some of the least productive lands from a forage perspective. Grazing is expected to continue on the remaining acreage of the allotment *outside of the project footprint.* As a result, approval of the Proposed Action would only result in minor impacts to the livestock operator, his livestock, and the quality of the remainder of the allotment as wildlife habitat, recreational use, or other multiple uses. The geographic scope of the impact would include only the solar ROW area comprising a relatively small amount (2,143 ac, or 2.2 percent) of the total Clark Mountain Grazing Allotment.

Construction

Construction activities are not expected to have any effect on the portions of the grazing allotment that would remain active. When livestock are present on the allotment, it is anticipated that they will not visit areas immediately around the project site for two reasons related to the availability of water: 1) there are no water sources in the immediate vicinity of the project; and 2) there are other locations within the allotment more distant from the project site that offer more desirable forage and water to support livestock grazing. In addition, the construction activities are not expected to have any impact on the ability to graze cattle on adjacent lands through vehicle strikes, noise, air emissions, or reduction of water or forage.

Operation and Maintenance

Similar to construction, operation and maintenance activities are not expected to have any effect on the portions of the grazing allotment that would remain active. Activities associated with operation and maintenance are not expected to have any impact on the ability to graze cattle on adjacent lands through vehicle strikes, noise, air emissions, or reduction of water or forage.

Decommissioning

The activities associated with decommissioning would generally occur within the same fenced area as project construction and operations. No further land use would be associated with decommissioning, so no additional impacts to the grazing allotment would occur. Upon project closure and decommissioning, the land that comprises the project footprint would be rehabilitated to reestablish plant communities originally occurring on the site before the original grant was issued. Following the achievement of the objectives for rehabilitation, as outlined in the rehabilitation plan, the ROW grant would then be cancelled, which ultimately would make the reclaimed land available for grazing again, which may necessitate adjustment to total permitting AUMs, subject to the applicable legal requirements in effect at that time.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the existing Ivanpah DWMA would place restrictions on grazing activities that could occur within the *23,363* acre portion of the allotment that would be added to the Ivanpah DWMA. These restrictions are discussed on Page 2-29 of the NEMO EIS (BLM 2002).

4.7.3.2 CEQA Significance Determinations

CEQA does not require significance determinations for impacts to livestock grazing.

4.7.4 Alternative 2: 2,385 Ac Alternative

4.7.4.1 Direct and Indirect Impacts

Alternative 2 is conceptually similar to the Proposed Action (Alternative 1), but would be placed within a different land area which comprises 2,385 ac. The land area associated with Alternative 2 would partially overlap with the land area associated with the Proposed Action north of the Primm Valley Golf Course, but would also include a parcel on the south side of the Primm Valley Golf Course. Both areas are currently included within the boundaries of the Clark Mountain Grazing Allotment. As a result, Alternative 2 would preclude grazing on 2,385 ac

which could impact up to 37 AUMs currently authorized on the Clark Mountain Allotment. As with the Proposed Action, Alternative 2 would not result in changing the amount of grazing that would occur in the remainder of the allotment. The adverse impact to the Clark Mountain Grazing Allotment caused by Alternative 2 (2,385 ac and 37 AUMs) would be slightly greater than for the Proposed Action (2,143 ac and 33 AUMs).

The construction, operation, and maintenance activities associated with Alternative 2 would be the same as those associated with the Proposed Action. As discussed for the Proposed Action, these activities are not expected to have any effect on the portions of the grazing allotment that would remain active. Activities associated with construction, operation and maintenance, and decommissioning are also not expected to have any impact on the ability to graze cattle on adjacent lands through vehicle strikes, noise, air emissions, or reduction of water or forage.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be approximately the same under Alternative 2 as Alternative 1. As discussed for the Proposed Action, modification of the boundary of the existing Ivanpah DWMA would result in additional restrictions on grazing within the portion of the allotment that is located within the DWMA*, as discussed on Page 2-29 of the NEMO EIS (BLM 2002)*.

4.7.4.2 CEQA Significance Determinations

CEQA does not require significance determinations for impacts to livestock grazing.

4.7.5 *Revised* Alternative 3: *1,685* Ac Alternative

4.7.5.1 Direct and Indirect Impacts

Revised Alternative 3 is conceptually similar to the Proposed Action (Alternative 1), but would be placed within a different land area which comprises *1,685* ac. The land area associated with *Revised* Alternative 3 would partially overlap with the land area associated with the Proposed Action, but would be shifted towards the south and east. The entire area is currently included within the boundaries of the Clark Mountain Grazing Allotment. As a result, *Revised* Alternative 3 would preclude grazing on *1,685* ac which could impact up to *27* AUMs currently authorized on the Clark Mountain Allotment. As with Proposed Action, *Revised* Alternative 3 would not result in changing the amount of grazing that would occur in the remainder of the allotment. The adverse impact to the Clark Mountain Grazing Allotment caused by *Revised* Alternative 3 (*1,685* ac and *27* AUMs) would *be lower than for* the Proposed Action (2,143 ac and 33 AUMs).

The construction, operation, and maintenance activities associated with *Revised* Alternative 3 would be the same as those associated with the Proposed Action. As discussed for the Proposed Action, these activities are not expected to have any effect on the portions of the grazing allotment that would remain active. Activities associated with construction, operation and maintenance, and decommissioning are also not expected to have any impact on the ability to graze cattle on adjacent lands through vehicle strikes, noise, air emissions, or reduction of water or forage.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be approximately the same under *Revised* Alternative 3 as Alternative 1. As discussed for the Proposed Action,

modification of the boundary of the existing Ivanpah DWMA would result in additional restrictions on grazing within the portion of the allotment that is located within the DWMA*, as discussed on Page 2-29 of the NEMO EIS (BLM 2002)*.

4.7.5.2 CEQA Significance Determinations

CEQA does not require significance determinations for impacts to livestock grazing.

4.7.6 Alternative 4: Reduced Acreage Alternative

4.7.6.1 Direct and Indirect Impacts

Construction activities associated with Alternative 4 would be the same as those of the Proposed Action, but would be of a smaller scale. The project site under Alternative 4 is 1,766 ac, or about 377 ac (17 percent) smaller than the project site under the Proposed Action. The land area associated with Alternative 4 is included within the boundaries of the Clark Mountain Grazing Allotment. As a result, Alternative 4 would preclude grazing on 1,766 ac which could impact up to 27 AUMs currently authorized on the Clark Mountain Allotment. As with Proposed Action, Alternative 4 would not result in changing the amount of grazing that would occur in the remainder of the allotment. The adverse impact to the Clark Mountain Grazing Allotment caused by Alternative 4 (1,766 ac and 27 AUMs) would be lower than for the Proposed Action (2,143 ac and 33 AUMs).

The construction, operation, and maintenance activities associated with Alternative 4 would be the same as those associated with the Proposed Action. As discussed for the Proposed Action, these activities are not expected to have any effect on the portions of the grazing allotment that would remain active. Activities associated with construction, operation and maintenance, and decommissioning are also not expected to have any impact on the ability to graze cattle on adjacent lands through vehicle strikes, noise, air emissions, or reduction of water or forage.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be approximately the same under Alternative 4 as Alternative 1. As discussed for the Proposed Action, modification of the boundary of the existing Ivanpah DWMA would result in additional restrictions on grazing within the portion of the allotment that is located within the DWMA*, as discussed on Page 2-29 of the NEMO EIS (BLM 2002)*.

4.7.6.2 CEQA Significance Determinations

CEQA does not require significance determinations for impacts to livestock grazing.

4.7.7 Alternative 5: No Action Alternative

4.7.7.1 Direct and Indirect Impacts

Under this alternative, the BLM would not approve the proposed facility and would not amend the CDCA Plan. As a result, no solar energy project would be constructed, and the BLM would continue to manage the site consistent with the existing land use designations.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, no new structures or facilities would be constructed, operated, or

decommissioned on the site and no new ground disturbance would occur. As a result, no impacts to grazing from construction, operation, or decommissioning of the project would occur.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under this alternative. Land uses associated with the Ivanpah DWMA would continue as they are today.

4.7.7.2 CEQA Significance Determinations

CEQA does not require significance determinations for impacts to livestock grazing.

4.7.8 Alternative 6: No Project, Exclude Solar Alternative

4.7.8.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. As a result, no solar energy project would be constructed on the site, and the BLM would continue to manage the site consistent with the existing land use designations.

Because the CDCA Plan would be amended to make the area unavailable for future solar energy development, it is expected that the site would remain in its existing condition, and would remain as part of the Clark Mountain Grazing Allotment. As a result, current use of the land for grazing would not change, and would continue without any disruptions from construction of solar energy facilities.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be approximately the same under Alternative 6 as Alternative 1. As discussed for the Proposed Action, modification of the boundary of the existing Ivanpah DWMA would result in additional restrictions on grazing within the portion of the allotment that is located within the DWMA, as discussed on Page 2-29 of the NEMO EIS (BLM 2002).

4.7.8.2 CEQA Significance Determinations

CEQA does not require significance determinations for impacts to livestock grazing.

4.7.9 Alternative 7: No Project, Approve Solar Alternative

4.7.9.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The Stateline Solar Farm Project would not be constructed on the project site and the project site would remain vacant in the near-term *and there would be no impacts on grazing*. Under this alternative, the BLM would not approve the proposed facility, but would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the site *in the future. The impacts associated with such future projects are speculative. However, the anticipated impacts would* be similar to those identified for the Proposed Action. If a solar or other renewable energy facility is proposed on the site in the

future, the impact on the grazing allotment would be considered in a project-specific environmental analysis that would occur at the time of such a proposal.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 7. Land uses associated with the Ivanpah DWMA would continue as they are today.

4.7.9.2 CEQA Significance Determinations

CEQA does not require significance determinations for impacts to livestock grazing.

4.7.10 Cumulative Impacts

4.7.10.1 Geographic Extent/Context

The geographic scope for the analysis of cumulative impacts related to grazing is the geographic area included in the Clark Mountain Grazing Allotment. Cumulative impacts to the allotment could result from multiple projects which would reduce the acreage and AUMs associated with the allotment. Impacts include an increase in the risk of vehicle strikes, from a release of hazardous materials to adjacent rangelands, or through reduction in forage due to the following cumulative project activities.

- Mountain Pass Lateral project
- Joint Port of Entry (JPOE)
- Ivanpah SEGS
- Eldorado Ivanpah Transmission Project (EITP)
- Desert Xpress
- *Calnev Pipeline Expansion Project*

4.7.10.2 Existing Cumulative Conditions

Past and present projects occurring in the vicinity of the proposed facility include recreational activities; mining; solar development; utility corridors used for transmission of electric power, natural gas, petroleum products and communications; transportation infrastructure (highway and railroad, both existing and proposed); and grazing. Impacts to livestock grazing in the planning area have been occurring for 100 years or more. The other past and present projects that have contributed to fugitive dust emissions on or near this allotment include authorized and unauthorized vehicle use, maintenance and construction of utility corridors, and location of mining claims. The net effect of these actions on livestock grazing is the removal of vegetation utilized for forage, and the danger of vehicles hitting cattle.

4.7.10.3 Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects; various BLM authorized actions/activities, proposed or approved projects within the County's jurisdiction, and other actions/activities that the agencies consider reasonably foreseeable. Table 4.1-2 summarizes the cumulative projects that would have the potential to combine with the Proposed Action and result in cumulative

impacts to *livestock grazing*. Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA, or will do so prior to approval. Even if environmental review has not been completed for the cumulative projects described in Table 4.1-2, their effects were considered in the cumulative impacts analysis in the *PA and* EIS/EIR.

Projects currently under construction in the vicinity of the proposed facility include the Ivanpah SEGS solar facility (3,471 ac), the EITP, Mountain Pass Lateral natural gas pipeline, and expansion of the Molycorp Minerals, LLC rare earths mine. Proposed projects in the vicinity of the proposed facility that would have potentially adverse impacts to livestock grazing include the *Joint Port of Entry,* the Southern Nevada Supplemental Airport, Desert Xpress high speed passenger rail line, Silver State Phase 2 solar facility, and the Calnev Pipeline Expansion Project. *Of these, the Molycorp expansion, Southern Nevada Supplemental Airport, and Silver State Phase 2 projects are not within the boundaries of the Clark Mountain Allotment.*

4.7.10.4 Cumulative Impacts Associated with Proposed Action

Construction

The current and proposed developments near the project site that would have the potential to induce cumulative impacts to the Clark Mountain Grazing Allotment during construction of the Stateline Solar facility include Ivanpah SEGS, EITP, and the Mountain Pass Lateral Project. It is expected that one or more of the cumulative projects described above may be under construction at the same time as the Proposed Action. In particular, construction of the Ivanpah SEGS facility is expected to continue through 2013. As a result, there may be short-term impacts during construction of these cumulative projects to the grazing allotment. These impacts could include exposure of cattle to dust emissions, increased risk of vehicle strike, and reduction of forage.

The Ivanpah SEGS and proposed Stateline projects would both preclude grazing in those portions of the Clark Mountain Allotment occupied by the project. The Ivanpah SEGS would precluded grazing on 3,471 ac, or approximately 3.6 percent. The Proposed Action would result in similar impacts on an addition 2,143 ac, or an additional 2.2 percent. In each instance, the Clark Mountain Grazing Allotment leaseholder was notified, pursuant to Section 4110.4-2 (b), by certified letter that the lands in question were being considered for another purpose that could result in a partial or complete reduction in the leaseholders permitted use. *In both cases, the leaseholder voluntarily relinquished the portion of the allotment.*

The modification would potentially have a direct, adverse impact on the leaseholder by reducing the land area available for forage, and potentially reducing the number of animal unit months available to him. For purpose of analysis, it is assumed that the Proposed Action would cause a 33 AUM reduction to the grazing preference on the Clark Mountain Allotment, and that the Ivanpah SEGS project could result in a 53 AUM reduction in grazing. Neither project would result in changes to the amount of grazing that would occur in the remainder of the allotment. As a result, this action would result in minor impacts to the livestock operator, his livestock, and the quality of the remainder of the allotment as wildlife habitat, recreational use, or other multiple uses. The geographic scope of the cumulative impact would include both the Ivanpah SEGS and Stateline Solar facility project areas. Together, these projects comprise a relatively small amount (5,614 ac, or 5.8 percent) of the Clark Mountain Grazing Allotment.

The other past, present, and reasonably foreseeable future projects that would occur during construction of the Stateline project would not be incompatible with the grazing allotment, and would not result in modification of the acreage and AUMs. Although the EITP and Mountain Pass Lateral projects would occur within the grazing allotment, the land area associated with these projects would be returned to potential use for grazing following completion of their construction as their area of *long-term* disturbance is small. The construction activity for these

projects would contribute, along with Ivanpah SEGS and the Proposed Action, to an increase in construction traffic, and therefore the potential for vehicle strikes. These projects would also contribute to the temporary and *long-term* removal of vegetation within the allotment, which could reduce the total available forage within the allotment.

Operation and Maintenance

It is expected that all of the cumulative projects described above would be operational at the same time as the Proposed Action. As a result, there may be long-term impacts during operation of those cumulative projects related to the Clark Mountain Grazing Allotment.

The Proposed Action would contribute to these possible long-term operational cumulative impacts since thousands of acres of land are proposed for solar energy and other developments in and near the grazing allotment. The conversion of these lands for the Ivanpah SEGS and Stateline projects would preclude use of 5,614 ac within the allotment for future use as rangeland for the life of the project. Because the Proposed Action would preclude grazing on the 2,143 ac project footprint, operation of the Proposed Action would contribute to a portion of this reduction in land available for grazing. *Overall, the total reduction from the cumulative projects constitutes only a small portion of the Clark Mountain Grazing Allotment (5.8 percent).*

Decommissioning

The decommissioning of the Proposed Action is expected to result in adverse impacts similar to those identified for construction. Disruptions from the decommissioning activities associated with other renewable energy and other projects would have the potential to combine with those of the Proposed Action, which could result in an adverse cumulative impact. However, the Proposed Action's contribution to cumulative impacts to grazing during decommissioning would be temporary. Following decommissioning, the land area associated with the Proposed Action would be made available for other uses that conform to the CDCA Plan and other applicable requirements, including grazing, and adverse impacts would cease.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the existing Ivanpah DWMA would not have an effect on the grazing allotment, and would not contribute to cumulative impacts to the allotment.

4.7.10.5 CEQA Significance Determinations

CEQA does not require significance determinations for impacts to livestock grazing.

4.7.10.6 Alternatives

Alternative 2: 2,385 Ac Alternative

The reduction in the grazing allotment, and physical activities associated with Alternative 2, would be approximately the same as that associated with the Proposed Action. Therefore, the cumulative impacts associated with Alternative 2 would be the same as those described above for the Proposed Action.

Revised Alternative 3: ***1,685*** Ac Alternative

The reduction in the grazing allotment, and physical activities associated with *Revised Alternative 3, would be smaller than that associated with the Proposed Action. The acreage that would be removed from the allotment under Revised Alternative 3 would be 1,685 acres, as compared to 2,143 acres for the Proposed Action. Therefore, the contribution of Revised Alternative 3 to cumulative impacts would be lower than those described above for the Proposed Action.*

Alternative 4: Reduced Acreage Alternative

The reduction in the grazing allotment, and physical activities associated with Alternative 4, would be smaller than that associated with the Proposed Action. The acreage that would be removed from the allotment under Alternative 4 would be 1,766 acres, as compared to 2,143 acres for the Proposed Action. Therefore, the contribution of Alternative 4 to cumulative impacts would be lower than those described above for the Proposed Action.

Alternative 5: No Action Alternative

Under Alternative 5, the No Action Alternative, the solar facility would not be constructed, and would therefore not contribute to cumulative impacts to the grazing allotment.

Alternative 6: No Project, Exclude Solar Alternative

By denying the solar energy application, Alternative 6 would allow existing land uses, including grazing, to continue on the project site as they are today. Therefore, this alternative would not contribute to cumulative impacts to the Clark Mountain Grazing Allotment.

Alternative 7: No Project, Approve Solar Alternative

By denying the solar energy application, Alternative 7 would allow existing land uses, including grazing, to continue on the project site as they are today. Therefore, Alternative 7 would not contribute to cumulative impacts to grazing. If a different solar facility were to be proposed on the site at a later time, the impacts of that proposal on the grazing allotment would be evaluated in a separate environmental analysis to be conducted at that time.

4.7.11 Mitigation Measures

No mitigation measures are recommended to address impacts of the Proposed Project to the grazing allotment.

4.7.12 Residual Impacts After Mitigation

The reduction in acreage and stocking rates to the Clark Mountain Grazing Allotment would be permanent, and would therefore represent a residual impact under NEPA.

4.8 Mineral Resources

4.8.1 Methodology for Analysis

This section describes effects on mineral resources that would be caused by implementation of the Stateline Solar Farm Proposed Action and alternatives. The following discussion addresses potential environmental impacts associated with construction, operation, and decommissioning of the Stateline Solar Farm Proposed Action and alternatives. A discussion of the cumulative impacts related to mineral resources is also included in this section.

Baseline conditions for the environmental setting relevant to mineral resources are presented in Section 3.8 of this *PA and* EIS/EIR. Construction activities, operation and maintenance activities, and decommissioning of the Stateline Solar Farm Proposed Action and/or alternative were evaluated based on their potential to affect the baseline conditions. Construction, operation, and maintenance activities were identified based on analysis provided in the Applicant's Plan of Development (First Solar 2011).

Based on the scope of the Proposed Action and alternatives, and the affected environment in which the project would be implemented, the potential impacts to energy and mineral resources identified for evaluation include the potential for the proposed facility to interfere with the availability of a mineral or energy resource.

4.8.2 CEQA Significance Criteria

The following indicators were used to determine if the proposed Stateline Solar Farm would result in significant impacts to mineral resources under CEQA. These indicators are *based on* the significance criteria listed for Mineral Resources in the CEQA Environmental Checklist, Appendix G of the CEQA Guidelines.

- MR-1: Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State.
- MR-2: Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

The proposed facility site is not included as a locally important mineral resource recovery site delineated on any local general plan, specific plan, or other land use plan. Therefore, the criterion MR-2 would not be applicable to the proposed site, and is not address further in this section.

4.8.3 Alternative 1: Proposed Action

4.8.3.1 Direct and Indirect Impacts

The analysis of direct and indirect impacts for the Proposed Action is organized according to the following project phases: construction; operation and maintenance; and decommissioning.

No oil, gas, or geothermal fields are located in the vicinity of the proposed Stateline Solar Farm project site and no active mineral claims have been made at the site. *The closest active mining site is the Molycorp lanthanides mine, located approximately seven miles away.*

Construction

Under Alternative 1, the Proposed Action, construction of the proposed action would have the potential to subject a total of 2,143 acres on the solar farm to ground-disturbing activities. These acres would be removed from potential use for sand and gravel production under BLM's

salable mineral program. In general, sand and gravel resources are widely available throughout the region. The primary consideration in the economic viability of sand and gravel operations is the transportation cost, which is driven by the proximity of the operation to its point of use. There is likely to be widespread development in Ivanpah Valley that would require sand and gravel resources, but removal of the 2,143-acres area from potential production is not expected to have any adverse impact due the widespread availability of these resources. The proposed site represents a small fraction of the total sand and gravel resource available within the valley. As a result, the Stateline Solar Farm project would not impact any current or reasonably foreseeable development of geologic resources. However, during construction, the applicant may need or desire to move sand and gravel either offsite, or between the different units of the facility. Should this occur, the applicant would be required to comply with BLM regulations in at 43 CFR Part 3600, which regulates the production and use of sand and gravel from public lands. Use of sand and gravel or other mineral materials within the boundaries of an authorized ROW is permitted; however, removal of these materials from an authorized ROW would require payment to the US of the fair market value of those materials.

The Proposed Action would not have any direct or indirect impact on the production of locatable or leasable minerals outside of the proposed site boundaries. There are no active mining claims in the immediate area and there are no indications that the area may experience significant economic commercial operations. If economic operations do occur in the area, the existence of the proposed facility is not expected to interfere with the ability of the claimant to access those minerals. The only potential conflict would occur if the claimant or another person locates a new claim for locatable minerals underneath the proposed site, within the project boundaries. This could potentially occur, as the proposed location has not been withdrawn from mineral entry. The potential for this scenario is expected to be low. If it did occur, conflicts between the surface use of the land for solar energy production and access to the subsurface minerals would be addressed in accordance with appropriate regulations. Finally, even if the facility did interfere with access to mineral resources during the life of the project, these resources would be preserved and would be available following project decommissioning. Therefore, the Stateline Solar Farm project would not impact any current or reasonably foreseeable development of mineral resources.

Roadways would be developed throughout the project area for construction and operations and maintenance activities. These roads would be graded, compacted earth and would be used for delivery of all project components during construction and later during operations and maintenance activities. If determined necessary by the Applicant, for dust control purposes, these roads may be upgraded to an aggregate or other dust-free surface. If upgrades are necessary it is likely this aggregate would come from a source(s) within or near the Stateline Solar Farm site. The source would be identified by a construction contractor and permitted through the BLM. Sand and gravel resources are common in the area and construction of aggregate roadways at the Stateline Solar Farm site would not result in the loss of availability of a known mineral resource that would be of value to the region and residents of the State, or of a locally important mineral resource recovery site. Additionally, it would not interfere with any active mining operations.

Development of the proposed Stateline Solar Farm site does not alter BLM's jurisdiction or authority as related to mineral claims and explorations. Construction would not permanently preclude the availability for exploration, extraction, and transport of any mineral resources found in the future within the site boundary. The potential for future explorations for mineral resources to occur on the proposed Stateline Solar Farm site during the lifetime of the project would continue to be subject to BLM approval.

Operation and Maintenance

Operation and maintenance activities would include the upkeep of internal access roads which could include the occasional application of new gravel surfaces to ensure the integrity of these road surfaces. It is anticipated that the same sources(s) of gravel utilized during initial construction of the roads would be utilized during the operation and maintenance phase. Gravel resources from the pre-determined on- or off-site sources may be extracted for road maintenance throughout the lifetime of the project. The quantity of aggregate required for operation and maintenance should be less than that needed for initial construction. Operation of the proposed plant facilities should not have any adverse impact on mineralogical resources. Sand and gravel are common in the area and operation and maintenance of the Stateline Solar Farm roadways would not result in the loss of a known mineral resource that would be of value to the region and residents of the State, or of a locally important mineral resource recovery site. Additionally, operation and maintenance would not interfere with any active mining operations.

Decommissioning

The decommissioning of the project would be similar to the construction activities described earlier, and would include demolition and removal of above-ground and subsurface facilities and site contouring and restoration. However, the duration of decommissioning would be shorter than the duration of construction. Decommissioning of the proposed Stateline Solar Farm site would not require a source of mineral resources such as sand and gravel, and would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State, or of a locally important mineral resource recovery site. Facility closure will make land occupied by the Proposed Action once again available for potential future development of mineralogical resources within the former project borders.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of the Proposed Action would not directly impact mineral resources as it would not result in ground disturbing activities, and would not explicitly prohibit mineral development in the area. By placing limitations on future land uses that cause surface disturbance within the newly added *23,363* acre area, this action would have the potential beneficial impact of conserving and preserving any mineral resources located within this area. However, the DWMA would have a limitation on overall development of 1 percent of the total land area, and it is possible that this restriction could eliminate some future, large scale mineral developments.

4.8.3.2 CEQA Significance Determinations

As described above, the proposed Stateline Solar Farm project may require a source of sand and gravel during the construction and operation/maintenance phases for roadways throughout the site. Development of the project site would not interfere with any active mining operations, and would not constitute a substantial impact on regionally or locally important mineral resources. As described above, development of the project site does not alter BLM's jurisdiction or authority as related to mineral claims and explorations. Construction would not permanently preclude the availability for exploration, extraction, and transport of any mineral resources found in the future within the site boundary. The potential for future exploration for mineral resources to occur on the proposed solar farm site during the lifetime of the project would continue to be subject to BLM approval. Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, and

Decommissioning) are presented below based on the CEQA Significance Criteria presented in Section 4.8.3.

MR-1

Construction

Construction of the proposed solar farm project would not result in impacts associated with the loss of availability of a known mineral resource that would be of value to the region and the residents of the State. Although construction activities could preclude sand and gravel production on the project site, those mineral resources are widely available in the region. Any potential access restrictions associated with the transportation of sand and gravel to the site during construction would be temporary. Even if the facility did interfere with access to mineral resources during the life of the project, these resources would be preserved and would be available following project decommissioning. Impacts would be less than significant.

Operation and Maintenance

Operation and maintenance of the proposed solar facility would not result in impacts associated with the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. Access onto and across the proposed Stateline Solar Farm site for the purposes of mineral exploration and extraction would be subject to permitting authority of the BLM, as consistent with existing and pre-project conditions. Impacts would be less than significant.

Decommissioning

Decommissioning of the proposed project would not result in impacts associated with the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impact would occur.

4.8.4 Alternative 2: 2,385 Ac Alternative

4.8.4.1 Direct and Indirect Impacts

The analysis of direct and indirect impacts for Alternative 2 is organized according to the following project phases: construction; operation and maintenance; and decommissioning.

Construction

Potential construction impacts associated with Alternative 2 would be similar to those described for the Proposed Action. For Alternative 2, the potential impacts could occur over an area of 2,385 ac, and therefore the potential for an impact would be slightly greater than that of the Proposed Action. Alternative 2 would include implementation of a portion of the solar farm in a separate area to the south of the Primm Valley Golf Course. Based on a review of the geologic setting of this area, the potential for mineral resources is expected to be the same as that for the area of the Proposed Action. Similar to the Proposed Action, no adverse impacts would be expected.

Operation and Maintenance

Operation and maintenance activities associated with Alternative 2 would be similar to those described for the Proposed Action. Therefore, operations associated with Alternative 2 would not have adverse impacts to mineral resources.

Decommissioning

Similar to the Proposed Action, decommissioning of the project under Alternative 2 would not have any adverse impacts on mineral resources.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of Alternative 2 would not impact mineral resources as it would not result in ground disturbing activities. By placing limitations on future land uses that cause surface disturbance within the newly added *23,121* acre area, this action would have the potential beneficial impact of conserving and preserving any mineral resources located within this area. However, the DWMA would have a limitation on overall development of 1 percent of the total land area, and it is possible that this restriction could eliminate some future, large scale mineral developments.

4.8.4.2 CEQA Significance Determinations

Although the project acreage is slightly larger than that of the Proposed Action, Alternative 2 would similarly not result in the loss of availability of a known mineral resource. All impact determinations for the Proposed Action would apply to Alternative 2.

4.8.5 *Revised* Alternative 3: *1,685* Ac Alternative

4.8.5.1 Direct and Indirect Impacts

The analysis of direct and indirect impacts for *Revised* Alternative 3 is organized according to the following project phases: construction; operation and maintenance; and decommissioning.

Construction

Potential construction impacts associated with *Revised* Alternative 3 would be similar to those described for the Proposed Action. For *Revised* Alternative 3, the potential impacts could occur over an area of *1,685* acres, and therefore the potential for an impact would be *lower* than that of the Proposed Action. Similar to the Proposed Action, no adverse impacts would be expected.

Operation and Maintenance

Operation and maintenance activities associated with *Revised* Alternative 3 would be similar to those described for the Proposed Action. Therefore, operations associated with *Revised* Alternative 3 would not have adverse impacts to mineral resources.

Decommissioning

Similar to the Proposed Action, decommissioning of the project under *Revised* Alternative 3 would not have any adverse impacts on mineral resources.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of *Revised* Alternative 3 would not impact mineral resources as it would not result in ground disturbing activities. By placing limitations on future land uses that cause surface disturbance within the newly added *23,821* acre area, this action would have the potential beneficial impact of conserving and preserving any mineral resources located within this area. However, the DWMA would have a limitation on overall development of 1 percent of the total land area, and it is possible that this restriction could eliminate some future, large scale mineral developments.

4.8.5.2 CEQA Significance Determinations

Like the Proposed Action, Revised Alternative 3 would not result in the loss of availability of a known mineral resource. All impact determinations for the Proposed Action would apply to Revised Alternative 3. Revised Alternative 3 would not result in a substantial lessening of any significant environmental impacts.

4.8.6 Alternative 4: Reduced Acreage Alternative

4.8.6.1 Direct and Indirect Impacts

Alternative 4 is conceptually similar to the Proposed Action (Alternative 1), but would be placed within a different land area which comprises 1,766 acres. The land area associated with Alternative 4 would be the same as the northern portion of the bifurcated footprint of Alternative 2.

Construction

Potential construction impacts associated with Alternative 4 would be similar to those described for the Proposed Action. For Alternative 4, the potential impacts could occur over an area of 1,766 acres, and therefore the potential for an impact would be lower than that of the Proposed Action. Similar to the Proposed Action, no adverse impacts would be expected.

Operation and Maintenance

Operation and maintenance activities associated with Alternative 4 would be similar to those described for the Proposed Action. Therefore, operations associated with Alternative 4 would not have adverse impacts to mineral resources.

Decommissioning

Similar to the Proposed Action, decommissioning of the project under Alternative 4 would not have any adverse impacts on mineral resources.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of Alternative 4 would not impact mineral resources as it would not result in ground disturbing activities. By placing limitations on future land uses that cause surface disturbance within the newly added *23,740* acre area, this action would have the potential beneficial impact of conserving and preserving any mineral resources located within this area. However, the DWMA would have a limitation on overall

development of 1 percent of the total land area, and it is possible that this restriction could eliminate some future, large scale mineral developments.

4.8.6.2 CEQA Significance Determinations

Like the Proposed Action, Alternative 4 would not result in the loss of availability of a known mineral resource. All impact determinations for the Proposed Action would apply to Alternative 4. Alternative 4 would not result in a substantial lessening of any significant environmental impacts.

4.8.7 Alternative 5: No Action Alternative

4.8.7.1 Direct and Indirect Impacts

Under Alternative 5, the Proposed Action would not be approved and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Therefore, the impacts of the Proposed Action would not occur. However, the land on which the project is proposed would become available to other uses that are consistent with BLM's CDCA plan, including another renewable energy project. If the Proposed Action is not approved, renewable projects would likely be developed on other sites in San Bernardino County, in other areas of California, or in adjacent states within the Desert Southwest as developers strive to provide renewable power that complies with utility requirements and State and Federal mandates. Several dozen solar and wind development applications for use of BLM land have been submitted for approximately one million acres of the California Desert Conservation Area. Additional BLM land in Nevada and Arizona also has applications for wind and solar projects. Potential adverse impacts to mineral resources on non-BLM-administered lands under the No Action Alternative could increase in the event developers focus their solar energy development efforts on state-owned, Tribal, and private lands. While solar energy development on nonfederal lands would be subject to a wide array of environmental reviews and approvals by virtue of state and local permitting processes, they may not be subject to NEPA requirements if federal funding or permitting is not required for the project.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under this alternative. Land uses associated with the Ivanpah DWMA would continue as they are today. Because the boundary of the DWMA would not be modified, the associated land area of more than 23,000 acres would be available to other land uses, as are acceptable in the CDCA Plan. Some of these land uses could have an adverse impact on mineral resources.

Overall, the No Action Alternative would not have any adverse impact on mineral resources.

4.8.7.2 CEQA Significance Determinations

No impacts would occur to mineral resources under the No Action Alternative.

4.8.8 Alternative 6: No Project, Exclude Solar Alternative

4.8.8.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. As a result, no solar energy project would be

constructed on the site, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because the CDCA Plan would be amended to make the area unavailable for future solar energy development, it is expected that the site would remain in its existing condition unless another use is designated in this amendment. As a result, no ground disturbing activities would occur, and there would therefore be no potential for impacts to mineral resources. However, renewable projects would likely be developed on other sites in San Bernardino County, in other areas of California, or in adjacent states within the Desert Southwest as developers strive to provide renewable power that complies with utility requirements and state and Federal mandates. Construction and operation impacts to mineral resources could occur at these other sites, similar to those described for the proposed Stateline Solar facility.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of Alternative 6 would not impact mineral resources as it would not result in ground disturbing activities. By placing limitations on future land uses that cause surface disturbance within the newly added 25,506 acre area, this action would have the potential beneficial impact of conserving and preserving any mineral resources located within this area. However, the DWMA would have a limitation on overall development of 1 percent of the total land area, and it is possible that this restriction could eliminate some future, large scale mineral developments.

4.8.8.2 CEQA Significance Determinations

No impacts would occur to mineral resources under Alternative 6.

4.8.9 Alternative 7: No Project, Approve Solar Alternative

4.8.9.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The Stateline Solar Farm Project would not be constructed on the project site and the project site would remain vacant in the near-term. Under this alternative, the BLM would not approve the proposed facility, but would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the site.

If this were to occur, it is likely that construction and operation impacts to mineral resources would be similar to the impacts described for Alternative 1.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 7. Land uses associated with the Ivanpah DWMA would continue as they are today. If a solar or other renewable energy facility is proposed on the site in the future, the impact on mineral resources would be considered in a project-specific environmental analysis that would occur at that time.

4.8.9.2 CEQA Significance Determinations

There would be no impacts to mineral resources under Alternative 7.

4.8.10 Cumulative Impacts

4.8.10.1 Geographic Extent/Context

Mining has been a long-standing activity on BLM lands, and the BLM addresses mining actions through the CDCA Plan, which would be amended under the Proposed Action and several alternatives. The State Mining and Geology Board typically designates Mineral Resource Zones at the county level, and the San Bernardino County General Plan analyzes mineral availability county-wide. In general, the geographic extent of the cumulative analysis for impacts to mineral resources depends on the importance and value of the resource. Restriction of access to mineral resources that are scarce, of high value, and of global importance would require analysis of the global availability of the mineral. Conversely, restriction of access to readily available, locally-used minerals such as sand and gravel, would have a much more local analysis area. For the purpose of this analysis, the mineral resources that are likely to be present are primarily sand and gravel, and therefore the geographic scope of the analysis is limited to the local area. The temporal scope of this cumulative analysis is the entire construction, operation, and decommissioning period for the proposed facility, because any limitations on mineral availability would exist until the project was decommissioned.

4.8.10.2 Existing Cumulative Conditions

Past and ongoing development throughout the region has resulted in alterations to the natural landscape, including loss of mineral resources and restricted access to mineral resources. Those projects which comprise existing cumulative conditions for mineral resources include active mineral developments, as well as projects which involve industrial and commercial development that have either removed mineral resources, or have restricted access to mineral resources. These conditions would be limited to the areas within and adjacent to the boundaries of the individual projects. Because mineral resources are evaluated for their regional importance, cumulative impacts to mineral resources must be considered within the county as a whole, including BLM lands within the county.

4.8.10.3 Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects; various BLM authorized actions/activities, proposed or approved projects within the County's jurisdiction; and other actions/activities that the agencies consider reasonably foreseeable. Table 4.1-2 summarizes the cumulative projects that would have the potential to combine with the Proposed Action and result in cumulative impacts to mineral resources. Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA, or will do so prior to approval. Even if environmental review has not been completed for the cumulative projects described in Table 4.1-2, their effects were considered in the cumulative impacts analysis in the *PA and* EIS/EIR.

Projects currently under construction in the vicinity of the proposed facility include the Ivanpah SEGS solar facility (3,471 acres). Proposed projects in the vicinity of the proposed facility that would have potentially adverse impacts to mineral resources include the Southern Nevada Supplemental Airport, Desert Xpress high speed passenger rail line, Silver State Phase 2 solar facility, and the Calnev Pipeline Expansion Project.

In addition to mining and other development projects, large areas of the Mojave Desert have been withdrawn from mineral development as a result of special designations for resource protection. These include areas in which mineral development is explicitly prohibited, such as National Parks and Preserves and Wilderness Areas.

The proposed site is currently not used for mineral production, nor is it under claim, lease, or permit for the production of locatable, leasable, or salable minerals. Sand and gravel resources are present at the site; however, such materials are present throughout the region and the proposed facility should not have an adverse impact on the availability of such resources. In addition, the potential resource would become available again following decommissioning of the project.

The acreages associated with past, present, and reasonably foreseeable projects are estimated in Table 4.8-1 below:

Table 4.8-1. Acreage Associated with Cumulative Projects

Project	Acreage Unavailable for Additional Mineral Development
Development Projects	
Stateline Proposed Action	2,143
Ivanpah SEGS	3,471
Desert Xpress	2,424
Molycorp	2,222
Calnev Pipeline	2,841
Mountain Pass Lateral	104
JPOE	133
EITP	480
Southern Nevada Supplemental Airport	22,934
Silver State Solar	2,967
Special Designation Areas	
Ivanpah DWMA	37,280
Stateline Wilderness	7,000
Mesquite Wilderness	44,800
Mojave National Preserve	1,600,000
Total	**1,728,799 acres**

The combination of the proposed facility, other developments, and the designations of special areas for resource protection would eliminate the opportunity for mineral extraction from approximately 1.73 million ac of land in the eastern portion of San Bernardino County. The vast majority of this (1.6 million acres) is represented by the Mojave National Preserve. Overall, the CDCA includes approximately 25 million acres, including 10 million acres managed by BLM. Therefore, actual impacts to the mining industry likely would be minimal due to the scope and extent of mining opportunities in this large region. As a result, the proposed Stateline Solar facility would not contribute substantially to a cumulative impact on any current or reasonably foreseeable development of geologic or mineral resources.

4.8.10.4 Cumulative Impacts Associated with Proposed Action

Construction

Potential cumulative construction impacts to mineral resources would be similar to those described for the Proposed Action, and no adverse impacts would be expected.

Operation and Maintenance

Cumulative impacts associated with operation and maintenance activities would be similar to those described for the Proposed Action, and no adverse impacts would be expected.

Decommissioning

Similar to the Proposed Action, cumulative impacts associated with decommissioning of the project would not have any adverse impacts on mineral resources.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of the Proposed Action would not be anticipated to have adverse impacts on mineral resources. By placing limitations on future land uses that cause surface disturbance within the newly added *23,363* acre area, this action would provide a beneficial impact in reducing the potential for the disturbance of existing mineral resources by other projects in the future. As a result, this action would have a beneficial impact on mineral resources within the newly protected area. However, the DWMA would have a limitation on overall development of 1 percent of the total land area, and it is possible that this restriction could eliminate some future, large scale mineral developments. This restriction would contribute, along with the other developments summarized in Table 4.8-1, to a further restriction in land available for mineral development in the area.

4.8.10.5 CEQA Significance Determinations

MR-1

With regard to the loss of availability of a locally important mineral resource or a known, regionally important mineral resource, development of the Proposed Action or an alternative could potentially result in temporary access restrictions associated with the presence of project-related trucks hauling aggregate material to and from the site. Such effects are not anticipated to have the potential to combine with similar impacts of other projects such that a significant impact to mineral resources would occur. Cumulative impacts associated with construction would be less than significant.

No cumulative impacts to mineral resources would occur as a result of operation and maintenance of the proposed facility.

Decommissioning of the proposed facility or an alternative could result in temporary access restrictions to mineral resource sites due to the presence of trucks hauling materials to and from the site, similar to the potential effects that could occur during project construction; such impacts would be temporary and less than significant.

4.8.10.6 Alternatives

Alternative 2: 2,385 Ac Alternative

For Alternative 2, the potential impacts could occur over an area of 2,385 acres, and therefore the potential for an impact would be slightly greater than that of the Proposed Action. Alternative 2 would include implementation of a portion of the solar farm in a separate area to the south of the Primm Valley Golf Course. Based on a review of the geologic setting of this area, the potential for mineral resources is expected to be the same as that for the area of the Proposed Action. Therefore, the cumulative impacts associated with Alternative 2 would be the same as those described above for the Proposed Action.

Revised Alternative 3: ***1,685*** Ac Alternative

The impacts to mineral resources associated with Revised Alternative 3 would be lower than those associated with the Proposed Action, due to the smaller project size. Therefore, the cumulative impacts associated with *Revised* Alternative 3 would be the same as those described above for the Proposed Action.

Alternative 4: Reduced Acreage Alternative

The impacts to mineral resources associated with Alternative 4 would be lower than those associated with the Proposed Action, due to the smaller project size. Therefore, the cumulative impacts associated with Alternative 4 would be lower than those described above for the Proposed Action.

Alternative 5: No Action Alternative

Alternative 5, the No Action Alternative, would not contribute to any adverse cumulative impacts to mineral resources. However, it would also not result in the beneficial impacts to these resources that would be associated with the modification of the boundary of the existing Ivanpah DWMA. By not protecting further areas from development, the No Action Alternative would allow future development projects to occur, and these projects could impact mineral resources.

Alternative 6: No Project, Exclude Solar Alternative

By denying the solar energy application and eliminating the site from future solar energy development, Alternative 6 would remove the potential for these land-intensive projects to potentially restrict access to mineral resources on the site.

Alternative 7: No Project, Approve Solar Alternative

By denying the solar energy application, Alternative 7 would allow existing land uses to continue on the project site as they are today. Although this alternative would not directly restrict access to mineral resources, it could allow land uses, such as renewable energy development, that could impact access to these resources in the future. The cumulative impacts of any future projects to mineral resources would be evaluated in project-specific environmental analyses at that time.

4.8.11 Mitigation Measures

As discussed above, construction, operation and maintenance, and decommissioning of the proposed Stateline Solar facility could result in temporary access restrictions to mineral operations in the area, as a result of trucks hauling aggregate for road maintenance; however, this would not result in impacts associated with the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No mitigation measures are proposed.

4.8.12 Residual Impacts After Mitigation

There would be no adverse, unavoidable impacts to mineral resources as a result of construction, operation and maintenance, or decommissioning of the Proposed Action.

4.9 Noise

This section presents the noise and vibration impacts of the Proposed Action and its alternatives, including noise and vibration during construction activities, operation and maintenance, and decommissioning of the facility, and *identifies* mitigation measures that would minimize *those* impacts.

Section 3.9 describes the existing ambient noise conditions *in and around the Project site* and applicable laws and regulations for the area where the Proposed Action and its alternatives are located.

4.9.1 Methodology for Analysis

Noise and vibration impacts associated with the Stateline Solar Farm Project can be created by temporary construction and decommissioning activities and by normal long-term operation of the solar facility, including noise from employee vehicle trips and O&M activities.

Noise from construction and decommissioning activities would include both on-site and off-site noise sources. The construction noise levels that would be generated *in connection with the Proposed Action* have been estimated based on the construction activities *described in Chapter 2.* Decommissioning noise levels would be similar to those estimated for construction. Operational noise would be generated by vehicle trips associated with the project and on-site O&M activities.

As discussed in Section 3.9.1, a project-generated noise increase of more than 3 decibels (A-weighted scale; dBA) is a perceptible change in environmental noise, while a 5 dBA difference typically causes a change *that may result* in community reaction. An increase of 10 dBA is perceived by people as a doubling of loudness, and almost certainly causes an adverse community response. As such, it is considered reasonable to assume that an increase in background noise levels up to 5 dBA in a residential setting would not be substantial and an increase of more than 10 dBA would be substantial. An increase between 5 and 10 dBA should be considered adverse, but may be either substantial or not substantial depending on the particular circumstances. Other factors to be considered in determining if an adverse noise impact is substantial include: (1) the resulting combined noise level; (2) the duration and frequency of the noise; (3) the number of people affected; (4) the land use designation of the affected receptor sites; and (5) public concern or controversy expressed at workshops, hearings, or in correspondence regarding the project.

The entire project study area is located on BLM-administered lands. BLM does not have regulations specific to noise and the San Bernardino County noise ordinances are not applicable on public lands. However, the County General Plan and noise ordinance establishes sound-level limits applicable to the residential property located near the project study area that could be adversely affected by the Project, and as such, they are being used in this analysis as a basis for describing possible impacts to *those sensitive receptors.*

Noise impacts due to construction activities are usually not considered to be substantial as long as construction activities are temporary, only intermittently affect any one location, limit use of heavy equipment and noise activities to daytime hours, and all industry-standard noise abatement measures are implemented for noise-producing equipment.

With respect to impacts from vibration, vibration-sensitive land uses would include high-precision manufacturing facilities or research facilities with optical and electron microscopes. None of these occur in the project area. Therefore, a substantial impact resulting from excessive groundborne vibration would depend on whether a nuisance, annoyance, or physical damage to any structure could occur.

The primary indicator of noise levels for this analysis is the A-weighted average noise level measures in decibels (dBA L_{eq}). The one-hour average noise level (dBA L_{eq} [1-hour]) is often used to characterize ongoing operations or long-term effects. The maximum dBA level (dBA L_{max}) is used to document the highest intensity, intermittent noise level. Another commonly used measure of noise effects is the day-night average sound level (L_{dn}). The L_{dn} value matches the L_{eq} value for noise generated from 7:00 a.m. to 10:00 p.m. but accounts for increased public sensitivity to noise at night with a 10 dBA penalty applied to nighttime sounds occurring between 10:00 p.m. and 7:00 a.m.

Based on the scope of the Proposed Action and alternatives *and the characteristics of the area where the Project would be located,* the following potential impacts associated with noise have been identified for evaluation:

- Noise attributable to the construction and operation of the Stateline Solar Farm Project would exceed an L_{eq} of 55 dBA at the closest residence; *and*
- Noise related to the Stateline Solar Farm Project exceeds applicable federal, state, and local standards at nearby noise-sensitive areas.

4.9.2 CEQA Significance Criteria

The following criteria were used to determine the significance of impacts under CEQA:

- NZ-1: Result in generation of, or exposure of persons to, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- NZ-2: Result in generation of, or exposure of persons to, excessive groundborne vibration or groundborne noise levels.
- NZ-3: Result in a substantial *long-term* increase in ambient noise levels above levels existing without the project.
- NZ-4: Result in a substantial temporary or periodic increase in ambient noise levels above levels existing without the project.
- NZ-5: Expose people residing in the area to excessive noise levels for a project located within an airport land use plan, or within two miles of a public airport or public, or within the vicinity of a private airstrip.
- NZ-6: For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

For the Stateline Solar Farm Project and alternatives, the criteria numbered NZ-5 and NZ-6 were determined to be inapplicable as the project area is not located within an airport land use plan, within two miles of a public or public use airport, or within the vicinity of a private airstrip. Therefore, these criteria are not addressed further in the impact analysis presented in this section.

4.9.3 Alternative 1: Proposed Action

4.9.3.1 Direct and Indirect Impacts

Effects on the existing ambient noise and vibration levels may arise from project construction, operations and maintenance, and decommissioning equipment and vehicles.

Construction

The Solar Farm construction would take approximately 2 to 4 years from the commencement of the construction process to complete the project. Typical construction work schedules are expected to be from 7:00 a.m. to 5:00 p.m., Monday through Friday, which complies with the San Bernardino County noise ordinance restrictions for construction activity of 7:00 a.m. to 7:00 p.m., except Sundays or Federal holidays. Due to hot desert conditions, the Applicant requests the flexibility to arrange work schedules into the evening or early morning hours. For example, during the high temperature months, installation crews may choose the option to work from 2 a.m. to 12 p.m. to avoid excessive heat exposure and take advantage of the coolest temperature hours. For safety reasons, certain construction tasks, including final electrical terminations, must be performed after dark when no energy is being produced. During construction, the on-site workforce is expected to average approximately 400 employees, with a peak on-site workforce of approximately 600 employees. The construction workforce would be recruited from within San Bernardino County and elsewhere in the surrounding region as much as practicable. Construction would increase nearby noise and vibration levels. Noise and vibration levels would vary during the construction period, depending on the construction phase.

Most construction equipment/vehicles would be brought to the Stateline Solar Farm Project site at the beginning of the construction process, and would remain on site throughout the duration of the construction activities for which they are needed; they generally would not be driven on public roads while in use for the project. Project construction traffic would involve construction worker commuting vehicles, plus periodic truck deliveries of materials and supplies, trash and other off-site truck shipments, and miscellaneous trips by project staff (e.g., supervisors). Peak vehicular traffic volumes would coincide with the peak of construction employment, which is estimated to be approximately 600 workers. At peak construction, a total of approximately 300 vehicles would make one trip per day to and from the site. Truck traffic during construction is expected to average approximately 40 truck trips per day. However, construction truck deliveries and shipments typically avoid the peak traffic hours in the morning and afternoon, so it is unlikely that they would represent a substantial increase in traffic volumes during the morning and afternoon peak commuting hours.

Noise from construction activities would occur both on-site and off-site during construction. On-site construction noise would be generated by construction equipment and off-site construction noise would be generated by vehicle trips from construction workers and the delivery of building materials and equipment.

Noise from On-site Construction Activities

Noise levels from common construction equipment at various distances can be estimated conservatively by assuming that the only attenuating mechanism is the divergence of the sound waves in open air (Table 4.9-1). Typical maximum noise levels range up to 88 dBA L_{max} at 50 feet during the noisiest construction phases. However, as piles will be required to support the PV equipment during construction, the pile drivers would increase the maximum noise level to about 93 dBA L_{max} at 50 feet from pile driving equipment.

Table 4.9-1. Typical Maximum Construction Equipment Noise Levels (L_{max})

Type of Equipment	Range of Maximum Sound Levels Measured (dBA at 50 feet)	Suggested Maximum Sound Levels for Analysis
Pile drivers, 12,000 to 18,000 ft-lb/blow	81-96	93
Rock drills	83-99	96
Jack Hammers	75-85	82
Pneumatic tools	78-88	85
Pumps	74/84	80
Dozers	77-90	85
Scrapers	83-91	87
Haul trucks	83-94	88
Cranes	79-86	82
Portable generators	71-87	80
Rollers	75-82	80
Tractors	77-82	80
Front-end loaders	77-90	86
Hydraulic backhoes	81-90	86
Hydraulic excavators	81-90	86
Graders	79-89	86
Air compressors	76-89	86
Trucks	81-87	86

Source: Noise Control for Buildings and Manufacturing Plants (Bolt, Beranek & Newman 1987).
dBA = A-weighted decibel
ft-lb/blow = foot pounds per blow
ft = feet
L_{max} = maximum instantaneous noise level

Construction of the Proposed Action would require the onsite use of earthmovers, scrapers, water trucks, pile driver, and pickup trucks. Based on Table 4.9-1, the maximum noise level generated by each scraper on the project site would be 87 dBA L_{max} at 50 feet from the earthmover. Each bulldozer would generate 85 dBA L_{max} at 50 feet. The maximum noise level from pile driving would be 93 dBA L_{max}. The maximum noise level generated by water and pickup trucks is approximately 86 dBA L_{max} at 50 feet from these vehicles. Each doubling of a sound source with equal strength increases the noise level by 3 dBA. As each piece of construction equipment operates as an independent noise source, the combined noise level would be 95 dBA L_{max} at a distance of 50 feet from the active construction area.

As discussed in Section 3.9, noise from a point source such as construction equipment attenuates by 6 dBA for every doubling of distance (this is known as the inverse square law). The project site for the Proposed Action is located within approximately 4,500 feet of the buildings at the Primm Valley Golf Club and within 1.5 miles of the hotels in Primm, Nevada. At these distances, based on the inverse square law, the 95 dBA L_{max} at 50 feet that would occur on-site would attenuate to about 56 dBA L_{max} at the Primm Valley Golf Club and 53 dBA L_{max} at the hotels in Primm, Nevada by distance alone. The closest residence to the on-site construction is located at a distance of approximately 2 miles. At this residence, by distance attenuation alone, the construction noise level would be reduced to 50 dBA L_{max}. *These levels would be lower than the 55 dBA L_{eq} daytime noise standard in the San Bernardino County Code during the daytime, but would exceed the nighttime 45 dBA L_{eq} noise standard if construction work were to occur at night.* With shielding provided by intervening natural terrain between the project site and these closest sensitive uses, construction noise from the project site under the Proposed Action would be reduced to below these levels.

The project site under the Proposed Action is located within approximately 3,500 feet from the Stateline Wilderness Area; within 2.5 miles of the Mojave National Preserve; and within 1.5 miles of the Ivanpah DWMA. The 95 dBA L_{max} at 50 feet that would occur on-site would attenuate to about 59 dBA L_{max} at the Stateline Wilderness Area, 47 dBA L_{max} at the Mojave National Preserve, and 53 dBA L_{max} at the Ivanpah DWMA.

Noise from Construction-Related Traffic

Trucks delivering equipment and materials to the site, as well as workers commuting to and from the site would incrementally increase noise on access roads leading to the site. Roads utilized during construction would include I-15, the I-15 on- and off-ramps at Yates Well Road, Yates Well Road, Silverton Road, and Sweet Bay Drive. The projected construction traffic is anticipated to be minimal when compared to the existing traffic volumes on I-15, and therefore, would not cause a substantial change in roadway noise. However, a relatively high single-event noise exposure potential would exist at a maximum level of 87 dBA maximum instantaneous noise level (L_{max}) with trucks passing at 50 feet. The closest residence to the project site's access road is located at the northeast corner of the I-15/Yates Well Road interchange. This residence is located approximately 250 feet from where the haul trucks would be passing by. At this distance, the residence would be exposed to periodic noise levels of up to 73 dBA L_{max} during construction.

Construction-generated roadway noise would not be audible at the Stateline Wilderness Area, the Mojave National Preserve, or the Ivanpah DWMA.

Ground Vibrations from Construction Activities

The use of large construction equipment, including pile drivers, may produce temporary groundborne vibration and associated groundborne noise. Ground-borne vibration from construction sources is usually localized to areas within about 100 feet from the vibration source (LSA 2011). The project site for the Proposed Action is within 4,500 feet of the buildings at the Primm Valley Golf Club, within 2 miles of the closest residence, and within 1.5 miles of the hotels in Primm, Nevada. At these distances, temporary vibrations would not result in adverse effects to buildings or cause annoyance to sensitive receptors. Likewise, ground vibration from construction activities would not affect the Stateline Wilderness Area, the Mojave National Preserve, or the Ivanpah DWMA.

Operation and Maintenance

The Proposed Action is designed to have essentially no moving parts, no thermal cycle, and no water use for electricity generation. Consequently, the Proposed Action would have minimal indirect effects on noise levels as a result of continuous operation. Noise associated with employee and delivery vehicle trips along access roads would be the primary source of operation noise. After the construction period, the workforce for O&M and security purposes is estimated to be seven to ten full time workers. Typical work schedules are expected to be during daylight hours only, with the exception of some limited maintenance work required after dark when PV modules are not live and 24-hour on-site security. Table 4.9-2 lists the number of daily trips that the Plan of Development (POD) indicated would be required to maintain the project facilities during project operations.

Table 4.9-2. Daily Maintenance Trips

Purpose	Operations Traffic
Employees (daily roundtrips)	Up to 10 vehicles
Deliveries (daily roundtrips)	Up to 10 vehicles

Source: (First Solar 2011).

As indicated in Table 4.9-2, there could be up to 20 daily vehicle trips during operation of the proposed solar facility. This would result in an incremental increase in traffic noise; however, noise associated with 20 average daily vehicle trips would not result in an audible increase to

existing ambient noise levels along access roads leading up to the project site. Overall, noise associated with operations and maintenance activities would be infrequent and of a low level. Therefore, noise from operation and maintenance would generally not be audible at the sensitive receptors, or at the Stateline Wilderness Area, the Mojave National Preserve, or the Ivanpah DWMA.

Ground Vibrations from Operation and Maintenance Activities

Operation of the proposed PV solar facility and associated maintenance activities would not generate any substantial ground-borne vibration or noise. Ground-borne vibration or noise cause caused by O&M activities would generally not be detectable, and therefore would not cause any adverse impacts.

Decommissioning

The decommissioning of the project would be similar to the construction activities described earlier, and would include demolition and removal of above-ground and subsurface facilities and site contouring and restoration. However, the duration of decommissioning would be shorter than the duration of construction. Upon closure of the Stateline Solar Farm Project, all operational noise from the project would cease. The remaining potential temporary noise source would be the dismantling of the structures and equipment and any site restoration work that may be performed. Since this noise would be similar to that caused by the original construction, it can be treated similarly. That is, noisy work could be performed during daytime hours, with machinery and equipment properly equipped with mufflers. Any noise laws and regulations that were in existence at that time would apply. Applicable mitigation measures included in BLM's decision would also apply unless modified.

Noise from On-Site Decommissioning Activities

Equipment to be utilized during decommissioning would be similar to the equipment used during construction, including: crane, excavator, and air hammer (to break up concrete foundation pedestals). As such, decommissioning activities would generate a temporary and localized increase in ambient noise levels. These activities are similar to the construction activities listed above; however, pile driving would not be required. Therefore, the decommissioning activities would generate noise levels of up to 91 dBA L_{max} at a distance of 50 feet. In addition, decommissioning activities would have a shorter duration than construction activities.

As previously discussed, the project site for the Proposed Action is located within 4,500 feet of the buildings at the Primm Valley Golf Club and within 1.5 miles of the hotels in Primm, Nevada. At these distances, the decommissioning activity noise would be reduced to 47 to 52 dBA L_{max} by distance attenuation alone. The closest residence to the decommissioning activity is located at a distance of approximately 2 miles. Noise from construction activities at this residence would be reduced to 45 dBA L_{max}. With shielding provided by intervening natural terrain between the project site and these closest sensitive uses, decommissioning noise from the project site under the Proposed Action would be reduced to below these levels. Noise generated by haul trucks during decommissioning would generally be the same as noise generated by the haul trucks during construction.

The project site under the Proposed Action is located within approximately 3,500 feet from the Stateline Wilderness Area; within 2.5 miles of the Mojave National Preserve; and within 1.5 miles of the Ivanpah DWMA. The 91 dBA L_{max} at 50 feet that would occur on-site would attenuate to about 55 dBA L_{max} at the Stateline Wilderness Area, 43 dBA L_{max} at the Mojave National Preserve, and 49 dBA L_{max} at the Ivanpah DWMA.

Noise from Traffic Associated with Decommissioning

Traffic volumes associated with decommissioning activities would likely be similar to traffic volumes associated with construction activities. However, because decommissioning would occur at least 30 years in the future, it is likely that vehicle engine technology would be different from current technology. Engine technologies that do not rely only on internal combustion engines would likely generate lower noise levels than those produced by current vehicles. This effect is already apparent with hybrid vehicles. Consequently, noise impacts from traffic associated with decommissioning activities would likely be somewhat less than the noise levels estimated for construction-related traffic.

Ground Vibrations from Decommissioning Activities

Ground-borne vibration from decommissioning activities would be essentially the same as the ground-borne vibrations from construction activities. Ground-borne activities during decommissioning activities would be incrementally lower as there would not be any pile driving. Ground-borne vibration from decommissioning activities would not adversely affect structures or sensitive receptors.

Modify Boundary of Ivanpah DWMA

Modification of the Ivanpah DWMA boundary would not generate noise or vibration. Noise associated with construction of the Proposed Action may be incrementally more audible within the DWMA if the boundary is extended toward the Stateline Solar Farm Project site. However, no adverse noise impacts would occur.

4.9.3.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) are presented below based on the CEQA Significance Criteria. Only those significance criteria which were determined to be relevant to the project are addressed below:

NZ-1

Construction

The nearest noise sensitive land uses are the Primm Valley Golf Club, the hotels in Primm, Nevada, and the residence located at the northeast corner of the I-15/Yates Well Road interchange. It is anticipated that noise from on-site construction equipment would not exceed noise regulations set forth by the San Bernardino County General Plan or the EPA. Noise generated by haul trucks during construction may expose the residence to periodic noise levels of up to 73 dBA L_{max} during individual pass-by events. The haul truck noise may cause a periodic increase in ambient noise of 5 dBA or more, which is generally considered the threshold for an adverse impact. Haul truck noise may exceed the EPA standards of 45 dBA L_{eq} for indoors and 55 dBA L_{eq} for outdoors at the residence during individual pass-by events. However, the exceedances would be intermittent and temporary as construction of the project would be completed within 2 to 4 years. Noise levels would likely not exceed the unacceptable levels of 70 dBA CNEL for residential uses specified in the State compatibility matrix. Although temporary noise during construction, as measured in dBa L_{max}, would exceed the EPA standards of 45 dBA L_{eq} for indoors and 55 dBA L_{eq} for outdoors at the residence during individual pass-by events, this would not be considered a significant impact, as the L_{max} values

are not directly comparable to the L_{eq} standards. *Similarly, the L_{max} construction noise levels at the residence could exceed the County's nighttime 45 dBA L_{eq} noise standard if construction work were to occur at night, but this is not directly comparable to the L_{eq} standard.* Therefore, the temporary noise would be a less than significant impact.

Operation and Maintenance

Noise levels during operation would not exceed the County noise regulations or the EPA standards of 45 dBA L_{eq} for indoors and 55 dBA L_{eq} for outdoors, at the nearest residence. Therefore, operation noise would not constitute an adverse impact and would be less than significant under CEQA.

Decommissioning

It is anticipated that noise from on-site decommissioning equipment would not exceed noise regulations set forth by the San Bernardino County General Plan or the EPA. The decommissioning of the project would require the use of haul trucks to remove the PV panels and graders/scrapers to return the project site to a natural profile. These activities are similar to the construction activities listed under the construction noise discussion; however, decommissioning would take less time to complete than construction of the Proposed Action. As with construction noise, off-site construction vehicle noise during decommissioning at the residence may cause a periodic increase in ambient noise of 5 dBA or more, which is generally considered the threshold for an adverse impact. Noise from construction vehicles passing by the nearest residence may intermittently exceed the EPA residential standards of 45 dBA L_{eq} for indoors and 55 dBA L_{eq} for outdoors. Although temporary noise during construction, as measured in dBa L_{max}, would exceed the EPA standards of 45 dBA L_{eq} for indoors and 55 dBA L_{eq} for outdoors at the residence during individual pass-by events, this would not be considered a significant impact, as the L_{max} values are not directly comparable to the L_{eq} standards. Therefore, the temporary noise would be a less than significant impact.

NZ-2

Construction

Ground-borne vibration and noise generated during construction of the proposed PV solar facility would not adversely affect any structures or sensitive receptors. Therefore, no impact would occur under CEQA.

Operation and Maintenance

Operation of the proposed PV solar facility and associated maintenance activities would not generate any meaningful ground-borne vibration or noise. Therefore, no impact would occur under CEQA.

Decommissioning

Ground-borne vibration and noise generated during decommissioning of the proposed PV solar facility would not adversely affect any structures or sensitive receptors. Therefore, no impact would occur under CEQA.

NZ-3

Construction

Construction of the project would occur over a span of 2 to 4 years. During this time, on-site construction activities and off-site vehicle trips would temporarily increase ambient noise levels above existing levels. However, because construction noise would be temporary, it would not result in a *long-term* increase in ambient noise levels. No impact would occur under CEQA.

Operation and Maintenance

On-site operational activities would not substantially increase ambient noise levels as the Proposed Action is designed to have essentially no moving parts, no thermal cycle, and no water use for electricity generation. Noise levels during operation would not exceed the County noise regulations or the EPA standards of 45 dBA L_{eq} for indoors and 55 dBA L_{eq} for outdoors, at the nearest residence. Operation and maintenance of the facility would generate an estimated maximum of 20 average daily vehicle trips. These vehicle trips would incrementally increase ambient noise levels above existing levels. However, noise associated with the vehicle trips would not result in an audible increase in ambient noise levels. Therefore, operation noise would not constitute an adverse impact and would be less than significant under CEQA.

Decommissioning

The decommissioning of the project would require the use of haul trucks to remove the PV panels and graders/scrapers to return the project site to a natural profile. Decommissioning activities would generate temporary noise, but would not result in a *long-term* increase in ambient noise levels. Upon completion of the decommissioning work, the noise associated with operation of the facility would be eliminated. No impact would occur under CEQA.

NZ-4

Construction

The nearest noise sensitive land use is the residence located at the northeast corner of the I-15/Yates Well Road interchange. Noise generated by construction vehicles during construction may exceed the EPA standards of 45 dBA L_{eq} for indoors, and 55 dBA L_{eq} for outdoors at the nearest residence. These exceedances would be intermittent and temporary as construction of the project would be completed within 2 to 4 years. Noise levels would likely not exceed the unacceptable levels of 70 dBA Community Noise Equivalent (CNEL) for residential uses specified in the State compatibility matrix. *Temporary* noise during construction, as measured in dBa L_{max}, would exceed the EPA standards of 45 dBA L_{eq} for indoors and 55 dBA L_{eq} for outdoors at the residence during individual pass-by events, *as well as the County standard of 45 dBA L_{eq} at night. However, these exceedances would be intermittent and temporary, and* would not be considered a significant impact, as the L_{max} values are not directly comparable to the L_{eq} standards. Therefore, the temporary noise would be a less than significant impact.

Operation and Maintenance

Noise levels during operation would not exceed the County noise regulations or the EPA standards of 45 dBA L_{eq} for indoors and 55 dBA L_{eq} for outdoors, at the nearest residence. Operation and maintenance of the facility would generate a maximum of 20 daily vehicle trips. Each vehicle trip to and from the site would create a periodic increase in ambient noise levels. However, the 20 daily vehicle trips not result in an audible increase in noise. Therefore,

operation noise would not constitute an adverse impact and would be less than significant under CEQA.

Decommissioning

The decommissioning of the project would require the use of haul trucks to remove the PV panels and graders/scrapers to return the project site to a natural profile. These activities are similar to the construction activities listed under the construction noise discussion; however, because the time period would be shorter than the construction phase, on-site noise would be incrementally lower during decommissioning. As with construction noise, off-site construction vehicles during decommissioning could result in noise levels at the residence to exceed the EPA standards of 45 dBA L_{eq} for indoors and 55 dBA L_{eq} for outdoors. Although temporary noise during construction, as measured in dBa L_{max}, would exceed the EPA standards of 45 dBA L_{eq} for indoors and 55 dBA L_{eq} for outdoors at the residence during individual pass-by events, this would not be considered a significant impact, as the L_{max} values are not directly comparable to the L_{eq} standards. Therefore, the temporary noise would be a less than significant impact.

4.9.4 Alternative 2: 2,385 Ac Alternative

4.9.4.1 Direct and Indirect Impacts

Alternative 2 would occupy two separate parcels north and south of the existing transmission corridor. The Solar Farm site, gen-tie corridor, and access corridor under Alternative 2 would require approximately 2,385 ac of land managed by the BLM, which is 242 acres (or about 12 percent) more than the Proposed Action.

Effects on the existing ambient noise and vibration levels may arise from construction, operations and maintenance, and decommissioning equipment and vehicles.

Construction

The Alternative 2 haul route would pass within the same distance of the existing residence at the I-15/Yates Well Road interchange as under the Proposed Action. Given that the same amount of materials and the same equipment would be used under Alternative 2 as the Proposed Action, the maximum haul truck noise impacts evaluated for the Proposed Action would apply to Alternative 2. Likewise, the same number of construction workers and associated noise from commuter vehicle trips would occur under Alternative 2 as the Proposed Action. However, because Alternative 2 would require construction on a project site that is about 12 percent larger than the project site under the Proposed Action, it is anticipated that the construction time period under Alternative 2 would be about 12 percent longer than the Proposed Action. Therefore, the noise impacts from construction vehicles would occur for a longer period of time under Alternative 2.

The construction equipment required to build Alternative 2 would be the same as under the Proposed Action. Therefore, the maximum noise level generated by the operation of construction equipment on the project site would be 95 dBA L_{max} at a distance of 50 feet. However, the distance from the project site to the nearest residence and the golf course would be less than the Proposed Action, which would result in greater impacts.

The project site for Alternative 2 is located within 1,200 feet of the buildings at the Primm Valley Golf Club, compared to the Proposed Action which is located within 4,500 feet of the Golf Club. Therefore, maximum noise levels from construction equipment at the Golf Club buildings would be an estimated 67 dBA L_{max} under Alternative 2, compared to 56 dBA L_{max} under the Proposed

Action. As with the Proposed Action, the project site under Alternative 2 is located within 1.5 miles of the hotels in Primm, Nevada and maximum noise from on-site construction activities would be 51 dBA L_{max} at the hotels. The project site under Alternative 2 is within 3,500 feet of the residence located at the northeast corner of the I-15/Yates Well Road interchange, compared to the Proposed Action which is located 2 miles from the same residence. The construction activity noise at the residence under Alternative 2 would be reduced to about 58 dBA L_{max} by distance attenuation alone, compared to the 49 dBA L_{max} under the Proposed Action. With shielding provided by intervening natural terrain between the project site and these closest sensitive uses, construction noise from the project site under Alternative 2 would be reduced to below these levels.

The project site under Alternative 2 is located approximately 3,000 feet farther from the Stateline Wilderness Area than the Proposed Action. Therefore, construction noise from Alternative 2 would be less audible at the Stateline Wilderness Area than the construction noise from the Proposed Action. The project site under Alternative 2 would be located approximately the same distance to the Mojave National Preserve and the Ivanpah DWMA.

Because ground-borne vibrations typically dissipate within about 100 feet from the source, no adverse effects associated with vibration would occur under Alternative 2.

Operation and Maintenance

Noise from operation and maintenance under Alternative 2 may be incrementally greater than the Proposed Action due to the larger project site. The larger project site may require more employee trips for maintenance activities than the Proposed Action. As such, the noise generated by employee trips may be incrementally greater under Alternative 2.

Decommissioning

Alternative 2 would be located on a project site that is about 12 percent larger and in closer proximity to the surrounding noise sensitive uses than the project site of the Proposed Action. The duration of decommissioning activities may be longer than the decommissioning under the Proposed Action, which would result in a longer period of increased noise levels due to decommissioning activities. Because the project site under Alternative 2 is closer to the Primm Valley Golf Club and the residence located at the I-15/Yates Well Road interchange, noise levels from decommissioning activities would be higher at the golf course and the residence than the Proposed Action.

In theory, compared to the Proposed Action, impacts related to ground-borne vibrations would be incrementally greater under Alternative 2 due to the closer proximity of off-site structures to the project site. However, because ground-borne vibrations typically dissipate within about 100 feet from the source, no adverse effects would occur under Alternative 2.

Modify Boundary of Ivanpah DWMA

The modification of the Ivanpah DWMA boundary would be the same under Alternative 2 as it would be under the Proposed Action. As with the Proposed Action, modification of the boundary under Alternative 2 would not generate noise or vibration. Noise associated with construction of Alternative 2 may be incrementally more audible within the DWMA than the Proposed Action due to the larger project size and longer duration of construction activities under Alternative 2. However, no adverse noise impacts would occur.

4.9.4.2 CEQA Significance Determinations

Overall, *the* noise and vibration *impacts* under Alternative 2 would *be* incrementally greater *than those* under the Proposed Action. *Given that incremental differences, all* impact determinations for the Proposed Action would apply to Alternative 2.

Unlike the Proposed Action, temporary noise from on-site equipment during construction and decommissioning under Alternative 2 could exceed the EPA noise standard of 55 dBA L_{eq} for outdoor residential areas, which would result in a potentially significant impact pursuant to significance criteria NZ-1 and NZ-4. Although temporary noise during construction, as measured in dBa L_{max}, would exceed the EPA standards of 45 dBA L_{eq} for indoors and 55 dBA L_{eq} for outdoors at the residence during individual pass-by events, this would not be considered a significant impact, as the L_{max} values are not directly comparable to the L_{eq} standards. Therefore, the temporary noise would be a less than significant impact.

4.9.5 *Revised* Alternative 3: *1,685* Ac Alternative

4.9.5.1 Direct and Indirect Impacts

Revised Alternative 3 would occupy approximately *1,685* acres in a contiguous project footprint in the northeastern portion of the project study area. The project site under *Revised* Alternative 3 is *458 ac smaller* than the project site under the Proposed Action.

Effects on the existing ambient noise and vibration levels may arise from construction, operations and maintenance, and decommissioning equipment and vehicles.

Construction

The *Revised* Alternative 3 haul route would pass within the same distance of the existing residence at the I-15/Yates Well Road interchange as under the Proposed Action. Given that the same amount of materials and the same equipment would be used under *Revised* Alternative 3 as the Proposed Action, the maximum haul truck noise impacts evaluated for the Proposed Action would apply to *Revised* Alternative 3. Likewise, the same number of construction workers and associated noise from commuter vehicle trips would occur under *Revised* Alternative 3 as the Proposed Action. Therefore, noise from off-site construction vehicles would reach the same levels as that of the Proposed Action, and for about the same duration.

The construction equipment required to build *Revised* Alternative 3 would be the same as under the Proposed Action. Therefore, the maximum noise level generated by the operation of construction equipment on the project site would be 95 dBA L_{max} at a distance of 50 feet.*However, the distance from the project site to the nearest residence and the golf course would be less than the Proposed Action, which would result in greater impacts.*

The project site under *Revised* Alternative 3 is situated the same distance as the Proposed Action site in relation to the Stateline Wilderness Area, the Mojave National Preserve, and the Ivanpah DWMA. Noise levels at these locations from construction under *Revised* Alternative 3 would be generally the same as construction noise under the Proposed Action, and for about the same duration.

Because ground-borne vibrations typically dissipate within about 100 feet from the source, no adverse effects associated with vibration would occur under Revised Alternative 3.

Operation and Maintenance

Noise from operation and maintenance under *Revised* Alternative 3 are expected to be the same as those for the Proposed Action, and for the same duration.

Decommissioning

Revised Alternative 3 would be located on a project site that is farther away from the surrounding noise sensitive receptors than the project site of the Proposed Action. As previously discussed, compared to the Proposed Action site, the project site under *Revised* Alternative 3 is farther than from the Primm Valley Golf Club and the residence located at the I-15/Yates Well Road interchange. Therefore, noise levels from decommissioning activities would be lower at the golf course and the residence than for the Proposed Action.

As with construction vibrations, in theory, compared to the Proposed Action, impacts related to ground-borne vibrations would be incrementally lower under *Revised* Alternative 3 due to the greater distance between the project site and off-site structures. However, because ground-borne vibrations dissipate within about 100 feet of the source, there would be no measurable reduction in groundborne vibration under this alternative.

Modify Boundary of Ivanpah DWMA

The modification of the Ivanpah DWMA boundary would be the same under *Revised* Alternative 3 as it would be under the Proposed Action. As with the Proposed Action, modification of the boundary under *Revised* Alternative 3 would not generate noise or vibration. Noise and vibration associated with construction and operation of *Revised* Alternative 3 would not affect the modification of the Ivanpah DWMA boundary.

4.9.5.2 CEQA Significance Determinations

Overall noise and vibration impacts would be incrementally lower under *Revised* Alternative 3 than the Proposed Action. However, the same CEQA significance determinations of the Proposed Action would apply to *Revised* Alternative 3 noise impacts.

4.9.6 Alternative 4: Reduced Acreage Alternative

4.9.6.1 Direct and Indirect Impacts

Alternative 4 is conceptually similar to the Proposed Action (Alternative 1), but would be placed within a different land area which comprises 1,766 ac. The land area associated with Alternative 4 would be the same as the northern portion of the bifurcated footprint of Alternative 2.

Construction

Construction activities associated with Alternative 4 would be the same as those of the Proposed Action, but would be of a smaller scale. The project site under Alternative 4 is 1,766 acres, or about 377 acres (17 percent) smaller than the project site under the Proposed Action. Alternative 4 would utilize the same materials and equipment as the Proposed Action. Therefore, the intensity of construction-related noise would be basically the same as in the Proposed Action, but the duration of the noise would be shorter.

The Alternative 4 haul route would pass within the same distance of the existing residence at the I-15/Yates Well Road interchange as under the Proposed Action. However, the volume of

materials, equipment, and commuter vehicle trips would be reduced due to the smaller scale of the alternative. In addition, because Alternative 4 would require construction on a project site that is about 17 percent smaller than the project site under the Proposed Action, it is anticipated that the construction time period under Alternative 4 would be about 17 percent shorter than the Proposed Action.

The construction equipment required to build Alternative 4 would be the same as under the Proposed Action. Therefore, the maximum noise level generated by the operation of construction equipment on the project site would be 95 dBA L_{max} at a distance of 50 feet. The distance from the project site to the nearest residence and the golf course would be about the same as the Proposed Action, which would result in the same level of impacts. However, the duration of impacts would be shorter.

The project site under Alternative 4 is located approximately 3,000 feet farther from the Stateline Wilderness Area than the Proposed Action. Therefore, construction noise from Alternative 4 would be less audible at the Stateline Wilderness Area than the construction noise from the Proposed Action. The project site under Alternative 4 would be located approximately the same distance to the Mojave National Preserve and the Ivanpah DWMA.

Because ground-borne vibrations typically dissipate within about 100 feet from the source, no adverse effects would occur under Alternative 4.

Operation and Maintenance

Noise from operation and maintenance under Alternative 4 would be incrementally smaller than the Proposed Action due to the smaller project site.

Decommissioning

Alternative 4 would be located on a project site that is about 17 percent smaller than the project site of the Proposed Action. The duration of decommissioning activities would be shorter than the decommissioning under the Proposed Action, which would result in a shorter period of increased noise levels due to decommissioning activities.

Because ground-borne vibrations typically dissipate within about 100 feet from the source, no adverse effects would occur under Alternative 4.

Modify Boundary of Ivanpah DWMA

The modification of the Ivanpah DWMA boundary would be the same under Alternative 4 as it would be under the Proposed Action. As with the Proposed Action, modification of the boundary under Alternative 4 would not generate noise or vibration.

4.9.6.2 CEQA Significance Determinations

Overall, noise and vibration under Alternative 4 would have incrementally lesser adverse effects than noise and vibration under the Proposed Action, due to the smaller project size and shorter duration of construction and decommissioning. All impact determinations for the Proposed Action would apply to Alternative 4. Alternative 4 would not result in a substantial lessening of any significant environmental impacts.

4.9.7 Alternative 5: No Action Alternative

4.9.7.1 Direct and Indirect Impacts

Under this alternative, the BLM would not approve the proposed facility and would not amend the CDCA Plan. As a result, no solar energy project would be constructed, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, no new structures or facilities would be constructed or operated on the site and no new ground disturbance would occur. As a result, there would be no increase in temporary or *long-term* noise or vibration over current conditions.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under this alternative. Land uses associated with the Ivanpah DWMA would continue as they are today. No noise or vibration impacts would occur as a result of the No Action Alternative.

4.9.7.2 CEQA Significance Determinations

The less than significant impacts and significant impacts identified for the Proposed Action would not occur under Alternative 5. No adverse or significant impacts related to noise and vibration would occur.

4.9.8 Alternative 6: No Project, Exclude Solar Alternative

4.9.8.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. As a result, no solar energy project would be constructed on the site, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Alternative 6 would leave the project site vacant and exclude the future development of the site as a solar facility. Because this alternative would not involve any construction, delivery, operations, maintenance, or decommissioning activities, there would be no increase in temporary or *long-term* noise.

Modify Boundary of Ivanpah DWMA

The modification of the Ivanpah DWMA boundary would be the same under Alternative 6 as it would be under the Proposed Action. As with the Proposed Action, modification of the boundary under Alternative 6 would not generate noise or vibration.

4.9.8.2 CEQA Significance Determinations

The less than significant impacts and significant impacts identified for the Proposed Action would not occur under Alternative 6. No impacts related to noise and vibration would occur.

4.9.9 Alternative 7: No Project, Approve Solar Alternative

4.9.9.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The Stateline Solar Farm Project would not be constructed. *Because this alternative would not involve any construction, delivery, operations, maintenance, or decommissioning activities, there would be no temporary or long-term noise related to this alternative.* As a result *of the Plan amendment*, it is possible that another solar energy project could be constructed on the site.

If this were to occur, it is likely that the construction and operations of the future development could result in noise and vibration impacts *similar to the Proposed Action*; however, noise and vibration impacts of the future development would be analyzed in subsequent NEPA and/or CEQA environmental review.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 7. Land uses associated with the Ivanpah DWMA would continue as they are today. This action would not have any noise or vibration impacts.

4.9.9.2 CEQA Significance Determinations

The impacts identified for the Proposed Action would not occur under Alternative 7. No impacts related to noise and vibration would occur.

4.9.10 Cumulative Impacts

4.9.10.1 Geographic Extent/Context

Noise

The geographic extent for the analysis of cumulative impacts related to noise is generally limited to areas within approximately 1 mile of the project study area, including along the haul truck routes. This area is defined as the geographic extent of the cumulative noise impact area because noise impacts would generally be localized. At distances greater than 1 mile, impulse noise may be briefly audible and steady construction and/or operational noise would generally dissipate such that the level of noise would blend in with background noise levels. Noise in the project area has increased over time as development of the area has occurred, including installation of the I-15, development of the Primm Valley Golf Club, use of the area for off-highway vehicle (OHV) recreational activities, and the current construction of the Ivanpah SEGS project. These developments have changed the quiet desert of the project area such that ambient noise levels existing today are substantially higher than would have occurred prior to such development, especially during daytime hours when traffic and human activity are greatest.

Vibration

Ground vibration impacts of the project stem primarily from temporary on-site construction activities. Ground vibrations dissipate more rapidly than airborne noise levels, limiting the geographic extent of ground vibration to the immediate vicinity of the vibration source. As noted in Section 3.9.1 (Noise – Environmental Setting) under “General Information on Vibration”, the geographic extent of potentially significant ground vibrations from construction equipment

seldom extends more than 100 feet from the source of the vibrations. Vibration in the project area has increased over time with development of features such as the I-15, where trucks and cars generate localized vibrations. In addition, the current construction of the Ivanpah SEGS project is a temporary source of vibration in the project area.

4.9.10.2 Existing Cumulative Conditions

Past and present projects occurring in the vicinity of the proposed facility include recreational activities; mining; solar development; utility corridors used for transmission of electric power, natural gas, petroleum products and communications; transportation infrastructure (highway and railroad, both existing and proposed); and grazing. Current ambient noise conditions reflect the cumulative effect of noise generation on a local geographic scale. Existing noise levels in the project vicinity are generally low, except along the I-15 during peak traffic periods, or when construction of the Ivanpah SEGS project generates intermittent high noise levels.

4.9.10.3 Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects, various BLM authorized actions/activities, proposed or approved projects within the County's jurisdiction, and other actions/activities that the agencies consider reasonably foreseeable. Table 4.1-2 summarizes the cumulative projects that would have the potential to combine with the Proposed Action and result in cumulative impacts to lands and realty. Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA, or will do so prior to approval. Even if environmental review has not been completed for the cumulative projects described in Table 4.1-2, their effects were considered in the cumulative impacts analysis in this *PA and* EIS/EIR.

Projects currently under construction in the vicinity of the proposed facility include the Ivanpah SEGS solar facility (3,471 acres). Proposed projects in the vicinity of the proposed facility that would have potentially adverse impacts associated with noise include the Southern Nevada Supplemental Airport, Desert Xpress high speed passenger rail line, Silver State Phase 2 solar facility, and the Calnev Pipeline Expansion Project.

4.9.10.4 Cumulative Impacts Associated with Proposed Action

Construction

The proposed developments near the project site would have the potential to contribute to cumulative noise and vibration impacts. It is expected that one or more of the cumulative projects described above may be under construction at the same time as the Proposed Action. In particular, construction of the Ivanpah SEGS facility, the Calnev Pipeline Expansion Project, and JPOE are expected to occur in 2013.

As a result of these concurrent construction projects, there would be multiple potential sources of noise from heavy equipment, blasting, and increased truck and commuter vehicle traffic in the area. The combined noise levels in the project area from construction of multiple concurrent projects would result in short-term increased noise levels which could exceed San Bernardino County noise standards. In addition, the temporary construction noise from the concurrent construction of nearby projects would increase ambient noise levels in the project area, resulting in a cumulative noise impact at the location of the residence at Yates Well Road, at the Primm Valley Golf Club, or at the Stateline Wilderness Area.

Operation and Maintenance

It is expected that all of the cumulative projects described above would be operational at the same time as the Proposed Action. As a result, there may be long-term noise and vibration impacts during operation of those cumulative projects. Implementation of the Southern Nevada Supplemental Airport and Desert Xpress rail line would be expected to result in noise sources that would increase ambient noise levels in the area. Operation of the proposed facility and the other cumulative projects would cause a minor increase in traffic along local roadways, including I-15, which would have the potential to combine with traffic generated by other projects in the area.

Decommissioning

The decommissioning of the Proposed Action is expected to result in adverse impacts similar to those identified for construction. Disruptions from the decommissioning activities associated with other renewable energy and other projects would have the potential to combine with those of the Proposed Action, which could result in an adverse cumulative impact. However, the Proposed Action's contribution to cumulative noise and vibration impacts during decommissioning would be temporary. Following decommissioning, no further project-related activities would occur, and adverse impacts would cease.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the existing Ivanpah DWMA would not create noise and vibration impacts, and would therefore not contribute to cumulative impacts associated with noise and vibration.

4.9.10.5 CEQA Significance Determinations

NZ-1

Construction

Because noise generated by haul trucks during construction may exceed the EPA standards of 45 dBA L_{eq} for indoors and 55 dBA L_{eq} for outdoors at the residence during individual pass-by events, temporary construction noise associated with the Proposed Action would constitute an adverse impact. Although temporary noise during construction, as measured in dBa L_{max}, would exceed the EPA standards of 45 dBA L_{eq} for indoors and 55 dBA L_{eq} for outdoors at the residence during individual pass-by events, this would not be considered a significant impact, as the L_{max} values are not directly comparable to the L_{eq} standards. Therefore, the temporary noise would be a less than significant impact. Construction traffic associated with other cumulative projects, including Ivanpah SEGS, the Mountain Pass Lateral, the Calnev Pipeline Expansion, and the Joint Port of Entry, is also expected to use the Yates Well Road exit for access, and each would therefore contribute to potentially significant cumulative noise impacts. These impacts would be temporary, and would be reduced and eventually cease as construction on each of the projects is completed. Implementation of mitigation measures MM-Noise-1, MM-Noise-2, and MM-Noise-3 would reduce the contribution of the Proposed Action and other action alternatives to this condition, so that their contribution to this cumulative impact would not be cumulatively considerable.

Operation and Maintenance

The combined noise from the various current and reasonably foreseeable future projects, including the Southern Nevada Supplemental Airport and Desert Xpress, is expected to increase ambient noise levels in the area, and contribute to a cumulatively significant noise impact, during the operational period of the Proposed Action. However, operational noise levels of the Proposed Action and alternatives would be very limited, and would not exceed the County noise regulations or the EPA standards of 45 dBA L_{eq} for indoors and 55 dBA L_{eq} for outdoors, at the nearest residence. Therefore, the contribution of the Proposed Action to this cumulative impact would not be cumulatively considerable.

Decommissioning

Noise generated by decommissioning of the Proposed Action and alternatives would occur within the context of the operations of the other reasonably foreseeable projects, including the Southern Nevada Supplemental Airport, Desert Xpress, and other projects that are currently unforeseen. It is expected that these projects would contribute to a cumulatively significant noise impact during the decommissioning period of the Proposed Action. The contribution of the Proposed Action to these impacts would be temporary. Implementation of mitigation measures MM-Noise-1, MM-Noise-2, and MM-Noise-3 would reduce the contribution of the Proposed Action and other action alternatives to this condition, so that their contribution to this cumulative impact would not be cumulatively considerable.

NZ-2

Ground-borne vibration and noise generated from construction, operations and maintenance, and decommissioning activities of the Proposed Action would pose no risk of cosmetic or structural damage to any existing buildings, and would not combine with other projects to result in a cumulative impact. No cumulative impact would occur.

NZ-3

No *long-term* noise impacts are associated with construction or decommissioning of the Proposed Action. Therefore, criterion NZ-3 does not apply to construction or decommissioning.

Operation and Maintenance

It is expected that all of the cumulative projects described above would be operational at the same time as the Proposed Action. Implementation of the Southern Nevada Supplemental Airport and Desert Xpress rail line would be expected to result in noise sources that would increase ambient noise levels in the area, and a cumulatively significant impact could occur. Operation of the proposed facility would cause a minor increase in traffic along local roadways, including I-15. Implementation of mitigation measures MM-Noise-1, MM-Noise-2, and MM-Noise-3 would reduce the contribution of the Proposed Action and other action alternatives to this condition, so that their contribution to this cumulative impact would not be cumulatively considerable.

NZ-4

Construction

Temporary construction noise associated with the Proposed Action would constitute an adverse impact, and would be significant and unavoidable under CEQA. Construction traffic associated with other cumulative projects, including Ivanpah SEGS, the Mountain Pass Lateral, the Calnev Pipeline Expansion, and the Joint Port of Entry, is also expected to use the Yates Well Road exit for access, and each would therefore contribute to a potentially significant cumulative increase in ambient noise levels. These impacts would be temporary, and would be reduced and eventually cease as construction on each of the projects is completed. Implementation of mitigation measures MM-Noise-1, MM-Noise-2, and MM-Noise-3 would reduce the contribution of the Proposed Action and other action alternatives to this condition, so that their contribution to this cumulative impact would not be cumulatively considerable.

Operation and Maintenance

The combined noise from the various current and reasonably foreseeable future projects, including the Southern Nevada Supplemental Airport and Desert Xpress, is expected to increase ambient noise levels in the area, and contribute to a cumulatively significant noise impact, during the operational period of the Proposed Action. However, operational noise levels of the Proposed Action and alternatives would be very limited, and would not exceed the County noise regulations or the EPA standards of 45 dBA L_{eq} for indoors and 55 dBA L_{eq} for outdoors, at the nearest residence. Therefore, the contribution of the Proposed Action to this cumulative impact would not be cumulatively considerable.

Decommissioning

Noise generated by decommissioning of the Proposed Action and alternatives would occur within the context of the operations of the other reasonably foreseeable projects, including the Southern Nevada Supplemental Airport, Desert Xpress, and other projects that are currently unforeseen. It is expected that these projects would contribute to a cumulatively significant noise impact, during the decommissioning period of the Proposed Action. The contribution of the Proposed Action to these impacts would be temporary. Implementation of mitigation measures MM-Noise-1, MM-Noise-2, and MM-Noise-3 would reduce the contribution of the Proposed Action and other action alternatives to this condition, so that their contribution to this cumulative impact would not be cumulatively considerable.

4.9.10.6 Alternatives

Alternative 2: 2,385 Ac Alternative

The noise and vibration impacts associated with Alternative 2 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with Alternative 2 would be the same as those described above for the Proposed Action.

Revised **Alternative 3:** ***1,685*** **Ac Alternative**

The noise and vibration impacts associated with Revised Alternative 3 would be reduced as compared to those associated with the Proposed Action, due to the smaller project size and shorter duration of construction and decommissioning. Therefore, the cumulative impacts associated with Revised Alternative 3 would be lower than those described above for the Proposed Action.

Alternative 4: Reduced Acreage Alternative

The noise and vibration impacts associated with Alternative 4 would be reduced as compared to those associated with the Proposed Action, due to the smaller project size and shorter duration of construction and decommissioning. Therefore, the cumulative impacts associated with Alternative 4 would be lower than those described above for the Proposed Action.

Alternative 5: No Action Alternative

Alternative 5, the No Action Alternative, would not contribute to noise or vibration impacts. Therefore, this alternative would not contribute to cumulative noise or vibration impacts.

Alternative 6: No Project, Exclude Solar Alternative

By denying the solar energy application and excluding the site from future solar energy development, Alternative 6 would not contribute to cumulative noise or vibration impacts.

Alternative 7: No Project, Approve Solar Alternative

By denying the solar energy application and excluding the site from future solar energy development, Alternative 7 would not contribute to cumulative noise or vibration impacts. The site could potentially be used for solar or other development in the future. Noise or vibration impacts associated with future actions would be considered in a later project-specific environmental analysis.

4.9.11 Mitigation Measures

Noise impacts would be reduced by implementation of the following mitigation measures. Even with mitigation, noise impacts from haul trucks during construction and decommissioning at the residence located at the northeast corner of the I-15/Yates Well Road interchange are likely to remain significant and unavoidable under CEQA, but for a short duration. These impacts would also be considered to be residual effects under NEPA.

MM-Noise-1: Noise Mitigation. Noise impacts from construction shall be mitigated to minimize effects on individuals, sensitive areas, fauna, and livestock. *Noise levels would* comply with local regulations. Noise *standards developed to comply with those regulations* shall be provided to the construction contractors for implementation and shall be enforced by construction inspectors using portable sound level meters to monitor noise levels.

The Applicant shall also ensure that construction equipment would be operated on an as-needed basis and shall be maintained according to manufacturer specifications to minimize noise impacts. Haul trucks and other engine-powered equipment shall be equipped with mufflers that meet all applicable regulations. Haul trucks shall be operated in accordance with posted speed limits. The use of truck engine compression brakes shall be limited to emergencies.

MM-Noise-2: Notification Prior to Construction. Construction haul trucks would pass within 250 feet of a residence and construction activities would occur adjacent to the Primm Valley Golf Club. To help ensure that these areas are not affected by noise and vibration levels, the Applicant shall give advance notice to landowners prior to construction, limit the hours during which construction activities are conducted, and ensure that construction proceeds quickly

through such areas. In the event that the contractor expects noise levels to exceed regulated noise standards (based on the types of construction equipment or procedures), notice shall be given to the Applicant so that immediate additional noise mitigation measures could be instituted.

MM-Noise-3: Noise Complaint Documentation and Resolution. Throughout the construction and decommissioning phases, the Applicant shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints. The Applicant shall set up a communication line or procedures to enable individuals to contact the company in the event that construction noise levels affect them. In such circumstances, the Applicant shall conduct noise assessments to ensure that the noise attributable to construction does not exceed 55 dBA L_{eq} at noise sensitive land uses. In the event that noise cannot meet regulated levels, the Applicant shall develop an acceptable alternative construction or decommissioning work plan.

Overall, noise impacts associated with operations and maintenance activities would be infrequent and of a low level. These impacts would not be significant under CEQA. However, implementation of the following mitigation measure would ensure that any noise attributable to operations and maintenance activities is minimized.

MM-Noise-4: Noise Mitigation. If the noise attributable to the operation of any on-site equipment used for maintenance activities exceeds 55 dBA L_{dn} at any noise sensitive land use, the Applicant shall implement noise mitigation measures at the receptor location, such as installation of windows with a Sound Transmission Class Rating acceptable to achieve a 45 dBA interior noise level, sound wall, etc. As such, the Applicant would minimize noise impacts to help ensure that project-related operations would not result in a significant effect on the ambient sound level.

4.9.12 Residual Impacts After Mitigation

The temporary, intermittent noise from haul trucks passing by the residence located at the northeast corner of the I-15/Yates Well Road interchange during construction and decommissioning would be reduced with implementation of mitigation measures MM-Noise-1, MM-Noise-2, and MM-Noise-3. However, even with implementation of the mitigation measures, haul trucks may still cause intermittent noise that may result in complaints from the residences. Therefore, the noise from haul trucks passing by the residence during construction and decommissioning would constitute a temporary unavoidable adverse impact. No mitigation is available to reduce this impact without rerouting haul trucks farther from the residence, which could have secondary adverse impacts with respect to air quality, biological resources, and sensitive receptors in other locations.

4.10 Paleontology

The BLM defines “significant paleontological resources” as any fossil that is considered to be of scientific interest, including most vertebrate fossil remains and traces, and certain rare or unusual invertebrate and plant fossils. A significant paleontological resource is considered to be of scientific interest if it is a rare or previously unknown species, it is of high quality and well preserved, it preserves a previously unknown anatomical or other characteristic, provides new information about the history of life on earth, or has an identified educational or recreational value. Paleontological resources that may be considered not to have scientific significance include those that lack provenience (the source, origin, or location of a fossil and the recording thereof) or context, lack physical integrity because of decay or natural erosion, or that are overly redundant or are otherwise not useful for research. Vertebrate fossil remains and traces include bone, scales, scutes (bony external plate or scale, as on the shell of a turtle), skin impressions, burrows, tracks, tail drag marks, vertebrate coprolites (fossilized feces), gastroliths (stomach stones), or other physical evidence of past vertebrate life or activities (BLM 2007).

4.10.1 Methodology for Analysis

The scope of this analysis included geologic map research, an aerial photo review, a review of pertinent scientific literature, a review of museum data, and a field survey. The paleontological resource work was conducted in accordance with current BLM paleontological resource management policy (BLM Manual and Handbook 8270-1 1998, BLM IM 2008-009 2007, BLM IM 2009-011 2008).

The greater the amount of disturbance to paleontologically-sensitive geologic formations (rocks and sediments), the greater the likelihood of adverse impacts to scientifically-significant paleontological resources. Even if scientifically significant fossils are not found in site surveys, the nature of an alluvial fan, such as that on which the project site is located, is one of continual erosion and deposition, so that fossils could erode onto the surface over time,. Therefore, it should also not be assumed that future ground disturbing projects in the area will not disturb scientifically significant fossils. Furthermore, it is assumed that scientifically significant fossils are located under the ground surface and although their specific locations cannot be determined within the project area, the potential for adverse effects resulting from project-related ground disturbing actions correlates with the paleontological sensitivity rankings of the geologic formations within the project area as determined using the Potential Fossil Yield Classification System (PFYC; BLM 2007, Paleo Solutions 2012). The majority of the site was classified as “unknown potential” for significant paleontological resources.

This impact analysis is based on a comparison of the amount of project-related ground disturbance under each alternative in paleontologically sensitive geologic formations. The greater the amount of ground disturbance in higher sensitivity formations (PFYC Class 3b), the greater the potential for adverse impacts to scientifically significant fossils. Conversely, lesser amounts of disturbance in higher sensitivity geologic formations have a lower potential for adverse impacts to scientifically significant fossils. The analysis is a two-dimensional approach that does not take into account depth (volume of subsurface disturbance), only aerial extent.

The approach taken in this analysis is to: (1) determine the acreage of paleontologically sensitive areas, as determined by geologic mapping and the PFYC, that would be subject to ground disturbance under each alternative, in order to estimate potential impacts to buried fossils which are still contained within bedrock and surficial sediments within the project area, and whose specific locations are unknown; and (2) determine the number and locations of recorded fossil sites within each alternative that should be avoided or otherwise mitigated prior to ground disturbance. Because resource damage or loss could occur whether disturbance is

temporary or *long-term*, the acreage of potential effect for each alternative is calculated based on temporary impact areas.

4.10.2 CEQA Significance Criteria

Adverse impacts to paleontological resources occur with the damage or destruction of fossils that are scientifically significant and the loss of associated scientific information. This includes destruction as the result of surface and subsurface disturbance as well as unlawful vandalism and unauthorized collection of fossil remains. Implementing paleontological mitigation for known fossil sites and unknown subsurface fossil sites would ensure that potential adverse impacts on paleontological resources within the project area are reduced or avoided. This includes collecting or avoiding scientifically significant fossils located on the ground surface and monitoring construction excavations in rocks and sediments with the potential to contain subsurface fossils so that they can be salvaged when they are uncovered.

Direct impacts to paleontological resources are the result of breakage and crushing as the result of disturbance to fossils that have eroded onto the surface and subsurface rocks and sediments in which fossils are entombed. Indirect impacts involve increased access to paleontological resources by construction personnel and recreational users of public lands as the result of project-related construction, leading to vandalism and unauthorized collection (theft) of the resource.

The indicator listed below was used to determine if the proposed facility would result in impacts to paleontological resources. This indicator is *based on* the significance criteria for paleontological resources listed in the CEQA Environmental Checklist, Appendix G of the CEQA Guidelines:

- Paleo-1: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

4.10.3 Alternative 1: Proposed Action

4.10.3.1 Direct and Indirect Impacts

Construction

Construction activities associated with the Stateline Solar Farm Project have the potential to disturb geologic formations (rocks and sediments) which may contain paleontological resources. Such disturbances could result in adverse impacts including damage to or destruction of these resources.

Under Alternative 1, the Proposed Action, a total of 2,143 acres on the solar farm could potentially be subject to ground-disturbing activities through excavation, cut-and-fill, grading, and emplacement of posts for solar modules and fences. Clearing and grading would be conducted to establish new roads, staging areas, concrete pads, and the solar array field. Clearing and grading for roads and smaller construction areas would be accomplished using bulldozers, road graders, or other standard earth-moving equipment. Clearing and grading within the solar array field would be accomplished using conventional farming equipment including tractors with disking equipment. Vibratory rollers would also be used in the solar array field to compact the soil and even out the surface after the disking is complete. Trenching would be done to install underground power transmission lines. In addition, excavation would be done to dig depressions for temporary water storage ponds, debris basin, and sedimentation basins.

The Paleo Solutions mapping and classification determined that the majority of the project site falls into PFYC classification 3b with an unknown potential for paleontological resources (Paleo Solutions 2012). Implementation of mitigation measure MM-Paleo-1 would be required to determine the potential for the presence of paleontological resources prior to initiation of ground disturbing activities.

The San Bernardino County Museum (SBCM) records review results indicate the potential for impact to paleontological resources as a result of excavation activities of undisturbed subsurface sediments in the solar farm project area. *Mitigation measure MM-Paleo-1 requires pre-construction identification of areas where ground disturbance could impact paleontological resources. Should* paleontological resources be discovered during ground disturbing activities, the mitigation measures in MM-Paleo-2 and MM-Paleo-3 would be required. Should unanticipated paleontological resources be discovered the mitigation measure in MM-Paleo-4 would be required.

Based upon the literature and archives search, field surveys, and compliance documentation for the solar farm project, the impacts to paleontological resources should be minimal and would be minimized to the extent feasible through application of the required mitigation measures. When properly implemented, the mitigation measures yield a net gain to the science of paleontology since fossils that would not otherwise have been discovered can be collected, identified, studied, and properly curated.

Operation and Maintenance

Operation of the Stateline Solar Farm Project Proposed Action would not involve any new ground disturbance, and therefore would not have any adverse impacts on paleontological resources.

Decommissioning

The decommissioning of the project would be similar to the construction activities described earlier, and would include demolition and removal of above-ground and subsurface facilities and site contouring and restoration. However, the duration of decommissioning would be shorter than the duration of construction. Decommissioning of the Stateline Solar Farm Project Proposed Action would *be subject to the same mitigation measures as construction. Should* paleontological resources be discovered during the course of decommissioning, the mitigation measures outlined in MM-Paleo-2, MM-Paleo-3, and MM-Paleo-4 would be implemented.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of the Proposed Action would not be anticipated to have adverse impacts on paleontological resources. By placing limitations on future land uses that cause ground disturbance within the newly added *23,363* acre area, this action would provide a beneficial impact in reducing the potential for the disturbance of existing paleontological resources.

4.10.3.2 CEQA Significance Determinations

Paleo-1

Construction

Under Alternative 1, there would be 2,143 acres disturbed during construction. The potential for damaging or destroying scientifically significant paleontological resources is unknown. The potential for directly or indirectly destroying a unique geologic feature associated with paleontological resources is unknown. The potential for causing the loss of valuable scientific information by disturbing the geologic context in which scientifically significant paleontological resources are contained is unknown. Implementation of mitigation measure MM-Paleo-1 would require pre-construction surveys, which would reduce the risk of affecting unidentified resources. Implementation of mitigation measure MM-Paleo-2 would require construction personnel be trained on the recognition of the types of paleontological resources that could be encountered in the project area and the procedures to be followed. Mitigation measure MM-Paleo-3 requires that a Paleontological Mitigation and Monitoring Plan be *implemented* that would establish procedures for identifying and managing resources. Mitigation measure MM-Paleo-4 requires that when potential fossils are discovered they be left undisturbed and provides for notification of the proper personnel. With implementation of these mitigation measures, impacts on paleontological resources would be reduced to a less-than-significant level.

Operation and Maintenance

Because no additional ground disturbance would occur, impacts to paleontological resources during operation and maintenance activities would be less than significant.

Decommissioning

Decommissioning of the Proposed Action *would be subject to the same mitigation measures as construction. Should* paleontological resources be discovered during the course of decommissioning, the mitigation measures outlined in MM-Paleo-2, MM-Paleo-3, and MM-Paleo-4 would be implemented. Therefore, impacts would be less than significant.

4.10.4 Alternative 2: 2,385 Ac Alternative

4.10.4.1 Direct and Indirect Impacts

Construction

Potential construction impacts associated with Alternative 2 would be similar to those described for the Proposed Action. For Alternative 2, the potential impacts could occur over an area of 2,385 ac, and therefore the potential for an impact would be slightly greater than that of the Proposed Action. Alternative 2 would include implementation of a portion of the solar farm in a separate area to the south of the Primm Valley Golf Course. Based on a review of the geologic setting of this area, the potential for paleontological resources is expected to be the same as that for the area of the Proposed Action. Similar to the Proposed Action, mitigation measures MM-Paleo-1 through MM-Paleo-4 would be required, and no adverse impacts would be expected.

Operation and Maintenance

Similar to the Proposed Action, operation and maintenance activities associated with Alternative 2 would not require any additional ground disturbance. Therefore, operations associated with Alternative 2 would not have adverse impacts to paleontological resources.

Decommissioning

Decommissioning of the project under Alternative 2 would *be subject to the same mitigation measures as construction.* *Should* paleontological resources be discovered during the course of decommissioning, the mitigation measures outlined in MM-Paleo-2, MM-Paleo-3, and MM-Paleo-4 would be implemented.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of Alternative 2 would not be anticipated to have adverse impacts on paleontological resources. By placing limitations on future land uses that cause ground disturbance within the newly added *23,121* acre area, this action would provide a beneficial impact in reducing the potential for the disturbance of existing paleontological resources.

4.10.4.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) would be the same as described above for the Proposed Action, based on the CEQA Significance Criteria presented in Section 4.10.2. Potential impacts of Alternative 2 would be less than significant.

4.10.5 *Revised* Alternative 3: *1,685* Ac Alternative

4.10.5.1 Direct and Indirect Impacts

Construction

Potential construction impacts associated with *Revised* Alternative 3 would be similar to those described for the Proposed Action. For *Revised* Alternative 3, the potential impacts could occur over an area of *1,685* ac, and therefore the potential for an impact would be *lower than that of the Proposed Action.* Similar to the Proposed Action, mitigation measures MM-Paleo-1 through MM-Paleo-4 would be required, and no adverse impacts would be expected.

Operation and Maintenance

Similar to the Proposed Action, operation and maintenance activities associated with *Revised* Alternative 3 would not require any additional ground disturbance. Therefore, operations associated with *Revised* Alternative 3 would not have adverse impacts to paleontological resources.

Decommissioning

Decommissioning of the project under *Revised* Alternative 3 would *be subject to the same mitigation measures as construction.* *Should* paleontological resources be discovered during

the course of decommissioning, the mitigation measures outlined in MM-Paleo-2, MM-Paleo-3, and MM-Paleo-4 would be implemented.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of *Revised* Alternative 3 would not be anticipated to have adverse impacts on paleontological resources. By placing limitations on future land uses that cause ground disturbance within the newly added *23,821* acre area, this action would provide a beneficial impact in reducing the potential for the disturbance of existing paleontological resources.

4.10.5.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) would be the same as described above for the Proposed Action, based on the CEQA Significance Criteria presented in Section 4.10.2. Potential impacts of *Revised* Alternative 3 would be less than significant.

4.10.6 Alternative 4: Reduced Acreage Alternative

4.10.6.1 Direct and Indirect Impacts

Construction

Potential construction impacts associated with Alternative 4 would be similar to those described for the Proposed Action. For Alternative 4, the potential impacts could occur over an area of 1,766 ac, and therefore the potential for an impact would be lower than that of the Proposed Action. Similar to the Proposed Action, mitigation measures MM-Paleo-1 through MM-Paleo-4 would be required, and no adverse impacts would be expected.

Operation and Maintenance

Similar to the Proposed Action, operation and maintenance activities associated with Alternative 4 would not require any additional ground disturbance. Therefore, operations associated with Alternative 4 would not have adverse impacts to paleontological resources.

Decommissioning

Decommissioning of the project under Alternative 4 would *be subject to the same mitigation measures as construction.* *Should* paleontological resources be discovered during the course of decommissioning, the mitigation measures outlined in MM-Paleo-1 through MM-Paleo-4 would be implemented.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of Alternative 4 would not be anticipated to have adverse impacts on paleontological resources. By placing limitations on future land uses that cause ground disturbance within the newly added *23,740* acre area, this action would provide a beneficial impact in reducing the potential for the disturbance of existing paleontological resources.

4.10.6.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) would be the same as described above for the Proposed Action, based on the CEQA Significance Criteria presented in Section 4.10.2. Potential impacts of Alternative 4 would be less than significant. In addition, Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

4.10.7 Alternative 5: No Action Alternative

4.10.7.1 Direct and Indirect Impacts

Under Alternative 5, the Proposed Action would not be approved and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Therefore, the impacts of the Proposed Action would not occur. However, the land on which the project is proposed would become available to other uses that are consistent with BLM's CDCA Plan, including another renewable energy project. If the Proposed Action is not approved, renewable projects would likely be developed on other sites in San Bernardino County, in other areas of California, or in adjacent states within the Desert Southwest as developers strive to provide renewable power that complies with utility requirements and State and Federal mandates. Several dozen wind and solar development applications for use of BLM land have been submitted for approximately one million acres of the California Desert Conservation Area. Additional BLM land in Nevada and Arizona also has applications for wind and solar projects. Potential adverse impacts to paleontological resources on non-BLM-administered lands under the No Action Alternative could increase in the event developers focus their solar energy development efforts on state-owned, Tribal, and private lands. While solar energy development on nonfederal lands would be subject to a wide array of environmental reviews and approvals by virtue of state and local permitting processes, they may not be subject to NEPA requirements if federal funding or permitting is not required for the project.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under the No Action Alternative. Land uses associated with the Ivanpah DWMA would continue as they are today. Because the boundary of the DWMA would not be modified, the associated land area of more than 23,000 acre would be available to other land uses, as are acceptable in the CDCA Plan. Some of these land uses, including other solar facilities, could create ground disturbance that could have an adverse impact on paleontological resources. Therefore, the No Action Alternative would not have the potential beneficial impact to paleontological resources associated with limiting future land uses in that area.

Overall, the No Action Alternative would not have any adverse impact on paleontological resources, but it also would not have any of the beneficial impacts associated with limiting future land uses.

4.10.7.2 CEQA Significance Determinations

No impacts would occur to paleontological resources under Alternative 5.

4.10.8 Alternative 6: No Project, Exclude Solar Alternative

4.10.8.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. As a result, no solar energy project would be constructed on the site, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because the CDCA Plan would be amended to make the area unavailable for future solar energy development, it is expected that the site would remain in its existing condition unless another use is designated in this amendment. As a result, no ground disturbing activities would occur, and there would therefore be no potential for impacts to paleontological resources. However, renewable projects would likely be developed on other sites in San Bernardino County, in other areas of California, or in adjacent states within the Desert Southwest as developers strive to provide renewable power that complies with utility requirements and state and Federal mandates. Construction and operation impacts to paleontological resources could occur at these other sites, similar to those described for the proposed Stateline Solar facility.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of Alternative 6 would not be anticipated to have adverse impacts on paleontological resources. By placing limitations on future land uses that cause ground disturbance within the newly added 25,506 acre area, this action would provide a beneficial impact in reducing the potential for the disturbance of existing paleontological resources.

4.10.8.2 CEQA Significance Determinations

No impacts would occur to paleontological resources under Alternative 6.

4.10.9 Alternative 7: No Project, Approve Solar Alternative

4.10.9.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The Stateline Solar Farm Project would not be constructed on the project site and the project site would remain vacant in the near-term. Under this alternative, the BLM would not approve the proposed facility, but would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the site.

If this were to occur, it is likely that construction and operation impacts to paleontological resources would be similar to the impacts described for Alternative 1.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 7. Land uses associated with the Ivanpah DWMA would continue as they are today. If a solar or other renewable energy facility is proposed on the site in the future, the impact on paleontological resources would be considered in a project-specific environmental analysis that would occur at that time.

4.10.9.2 CEQA Significance Determinations

There would be no impacts to paleontological resources under Alternative 7.

4.10.10 Cumulative Impacts

4.10.10.1 Geographic Extent/Context

The geographic extent for cumulative impacts analysis of paleontological resources includes the local region in which similar resources could occur.

4.10.10.2 Existing Cumulative Conditions

Cumulative conditions to paleontological resources involve the loss of non-renewable scientifically important fossils and associated data, and the incremental loss to science and society of these resources over time. Energy and commercial development projects have resulted in cumulative conditions affecting paleontological resources in Ivanpah Valley. The implementation of paleontological mitigation measures during surface disturbing projects has resulted in the salvage and permanent preservation of large numbers of scientifically significant paleontological resources that would otherwise have been destroyed. This has greatly reduced the cumulative effects of such projects on paleontological resources, and has resulted in the beneficial cumulative effect of making these fossils available for scientific research and education by placing them in museum collections.

4.10.10.3 Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects, various BLM authorized actions/activities, proposed or approved projects within the County's jurisdiction, and other actions/activities that the agencies consider reasonably foreseeable. Table 4.1-2 summarizes the cumulative projects that would have the potential to combine with the Proposed Action and result in cumulative impacts to paleontological resources. Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA, or will do so prior to approval. Even if environmental review has not been completed for the cumulative projects described in Table 4.1-2, their effects were considered in the cumulative impacts analysis in the *PA and* EIS/EIR.

Projects currently under construction in the vicinity of the proposed facility include the Ivanpah SEGS solar facility (3,471 acres). Proposed projects in the vicinity of the proposed facility that would have potentially adverse impacts to paleontological resources include the Southern Nevada Supplemental Airport, Desert Xpress high speed passenger rail line, Silver State Phase 2 solar facility, and the Calnev Pipeline Expansion Project.

4.10.10.4 Cumulative Impacts Associated with Proposed Action

Construction

Unknown, unrecorded paleontological resources may be found at nearly any present and future development site. However, as they are discovered, sites are recorded and information retrieved. If the nature of the resource requires it, the resource is protected. When discovered, paleontological resources are treated in accordance with applicable federal and State laws and regulations as well as the mitigation measures and permit requirements applicable to a project.

It is not known what paleontological resources, if any, would be affected by development of all present and future projects identified in Table 4.1-2. However, given the density of past development in Ivanpah Valley, and the large number of reasonably foreseeable projects listed in Table 4.1-2, it is reasonable to assume that resources exist and could be uncovered at several of these sites. Mitigation measures MM-Paleo-1 through MM-Paleo-4 require that resources discovered during construction of the proposed facility be protected. In addition, it is likely that similar mitigation measures would be required for the reasonably foreseeable future projects, thereby reducing cumulative impacts. Assuming that pre-project surveys are required, it is reasonable that few if any additional scientifically significant fossils would remain on the ground surface within a project area. Additionally, the implementation of paleontological mitigation measures during ground disturbance could result in the salvage and permanent preservation of large numbers of scientifically significant paleontological resources that would otherwise be destroyed. This would greatly reduce the cumulative effects of such projects on paleontological resources, and would make these fossils available for scientific research and education by placing them in museum collections. Therefore, the proposed facility impacts, when combined with impacts from past, present and reasonably foreseeable projects would be negligible.

Operation and Maintenance

As discussed in Alternative 1, no direct impacts to paleontological resources are anticipated in association with project operation and maintenance. Therefore, with the implementation of mitigation measures for known fossil sites and unknown subsurface fossil sites, potential adverse cumulative impacts on paleontological resources within the project area would be negligible.

Decommissioning

Decommissioning of the facility would *be subject to the same mitigation measures as construction.* *Should* paleontological resources be discovered during the course of decommissioning, the mitigation measures outlined in MM-Paleo-1 through MM-Paleo-4 would be implemented. With the implementation of the included mitigation measures, no decommissioning-related cumulative impacts to paleontological resources are anticipated and, therefore, this action would not contribute to cumulative impacts to paleontological resources in the region.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of the Proposed Action would not be anticipated to have adverse impacts on paleontological resources. By placing limitations on future land uses that cause ground disturbance within the newly added *23,363* acre area, this action would contribute to a cumulative beneficial impact in reducing the potential for the disturbance of existing paleontological resources by other projects in the future. As a result, this action would have a beneficial impact on paleontological resources within the newly protected area.

4.10.10.5 CEQA Significance Determinations

Paleo-1

The potential for damaging or destroying scientifically significant paleontological resources with implementation of the Proposed Action or any alternatives is unknown. The potential for directly or indirectly destroying a unique geologic feature associated with paleontological resources is unknown. The potential for causing the loss of valuable scientific information by disturbing the geologic context in which scientifically significant paleontological resources are contained is unknown. With implementation of mitigation measures MM-Paleo-1 through MM-Paleo-4, cumulative impacts on paleontological resources would be reduced to a less-than-significant level.

Alternatives

Alternative 2: 2,385 Ac Alternative

For Alternative 2, the potential impacts could occur over an area of 2,385 acres, and therefore the potential for an impact would be slightly greater than that of the Proposed Action. Alternative 2 would include implementation of a portion of the solar farm in a separate area to the south of the Primm Valley Golf Course. Based on a review of the geologic setting of this area, the potential for paleontological resources is expected to be the same as that for the area of the Proposed Action. Therefore, the cumulative impacts associated with Alternative 2 would be the same as those described above for the Proposed Action.

***Revised* Alternative 3: *1,685* Ac Alternative**

The impacts to paleontological resources associated with *Revised* Alternative 3 would be *lower than those associated with the Proposed Action, due to the smaller project size. Therefore, the cumulative impacts associated with Revised Alternative 3 would be lower than those described above for the Proposed Action.*

Alternative 4: Reduced Acreage Alternative

The impacts to paleontological resources associated with Alternative 4 would be lower than those associated with the Proposed Action, due to the smaller project size. Therefore, the cumulative impacts associated with Alternative 4 would be lower than those described above for the Proposed Action.

Alternative 5: No Action Alternative

Alternative 5, the No Action Alternative, would not contribute to any adverse cumulative impacts to paleontological resources. However, it would also not result in the beneficial impacts to these resources that would be associated with the modification of the boundary of the existing Ivanpah DWMA. By not protecting further areas from development, the No Action Alternative would allow future development projects to occur, and these projects could impact paleontological resources.

Alternative 6: No Project, Exclude Solar Alternative

By denying the solar energy application and eliminating the site from future solar energy development, Alternative 6 would remove the potential for these land-intensive projects to potentially threaten paleontological resources on the site.

Alternative 7: No Project, Approve Solar Alternative

By denying the solar energy application, Alternative 7 would allow existing land uses to continue on the project site as they are today. Although this alternative would not have the potential to threaten paleontological resources through implementation of the Proposed Action, it could allow land uses, such as renewable energy development, that could impact these resources in the future. The cumulative impacts of any future projects to paleontological resources would be evaluated in project-specific environmental analyses at that time.

4.10.11 Mitigation Measures

In paleontologically sensitive areas, the objective of paleontological mitigation is to reduce adverse effects on paleontological resources by recovering fossils and associated contextual data prior to and during ground disturbing activities. Paleontological mitigation results in a beneficial impact when scientifically important fossils and associated data are housed in perpetuity and made available for educational purposes and scientific research in an accredited and federally approved museum.

MM-Paleo-1: Pre-Construction Ground Survey. Prior to construction, a field survey should be conducted by a qualified paleontologist for the geological units classified as PFYC 3b with an unknown potential for containing paleontological resources. The Applicant should provide the survey team with maps and drawings showing the footprint of the installation, construction lay down areas, facilities, and intended roadways. The maps should identify all areas where ground disturbance is or may be anticipated. The drawings should show the location, depth, and extent of all ground disturbances and should be at a scale of 1 inch = 40 feet to 1 inch = 100 feet range. Should the footprint of the project or its linear facilities change, then the project owner shall provide maps and drawings reflecting those changes to the Project Paleontologist and BLM's Authorized Officer to determine if additional survey is required. If construction of the Stateline Solar Farm project is to proceed in stages, maps and drawings may be submitted prior to the start of each stage. A letter identifying the proposed schedule should be provided to the Project Paleontologist and BLM's Authorized Officer. Before work commences, the Applicant shall notify the Project Paleontologist and BLM's Authorized Officer of any construction phase scheduling changes. At a minimum, the project owner should ensure that the Project Paleontologist consults weekly with the project superintendent or construction field manager to confirm the area(s) to be worked the following week until ground disturbance is completed.

MM-Paleo-2: Pre-Construction Training. Prior to construction, a training session on the recognition of the types of paleontological resources that could be encountered within the project area and the procedures to be followed if they are found shall be presented to project construction personnel by a qualified and BLM-permitted professional paleontologist.

MM-Paleo-3: Paleontological Mitigation and Monitoring Plan. *Should paleontological monitoring conducted as part of mitigation measure MM-Paleo-1* determine that areas of high

paleontological sensitivity exist and could be impacted, the Project Paleontologist would *implement* a Paleontological Mitigation and Monitoring Plan (PMMP) in accordance with the provisions of the California Environmental Quality Act, the County of San Bernardino regulations, and the proposed guidelines of the Society of Vertebrate Paleontology (Scott 2009). *The* plan *shall be implemented* by a qualified vertebrate paleontologist as defined in the County of San Bernardino Development Code §82.20.040 (Scott 2009), and must *include surveys and mitigation, as specified in Section .08(E)(3) of* Manual 8270 (BLM 1998). Under §82.20.040 a qualified vertebrate paleontologist holds an advanced degree (Master's or higher) in geology, biology, or a related discipline (excluding archaeology) and has at least five years experience with collecting, identifying, and curating paleontological (not including cultural) resources.

MM-Paleo-4: Recovery, Identification, and Curation of Specimens. If construction or other project personnel discover any potential fossils during construction, project operation and maintenance, or decommissioning, the fossils shall be left undisturbed and the BLM Authorized Officer shall be notified immediately. Ground-disturbing activities within the immediate area would be temporarily stopped in the event of an unanticipated paleontological discovery in the course of subsurface disturbance. Qualified paleontologic personnel would recover, identify, and curate specimens identified during the field survey or monitoring program. Specimens would be recovered; prepared in such a way as to allow identification, stabilized, identified, permanently preserved, and curated into the collections of the Division of Geological Sciences of the SBCM. The Applicant would obtain a written repository agreement with the SBCM prior to commencement of the Proposed Action. Mitigation of adverse impacts to significant paleontologic resources would be considered incomplete until all collected specimens have been accessioned into the SBCM's collection. Procedures for the retention of specimen provenance information, specimen identification, and specimen curation would be detailed in the PMMP.

To expedite salvage of a paleontological resource, the Project Paleontologist would have the authority to request the assistance of Proposed Action resources (e.g., heavy machinery or construction staff) to remove the resource and relocate it to a designated stockpile area. Construction would resume at the discovery location after the Project Paleontologist has authorized Proposed Action activities to resume. The Project Paleontologist would identify and curate recovered paleontological specimens and prepare a report detailing the finding, presenting an analysis on the potential for additional paleontological resources, and preparing recommendations for implementation of additional mitigation measures.

4.10.12 Residual Impacts After Mitigation

The implementation of the required mitigation measures would substantially reduce *the* potential *for* adverse impacts on scientifically-significant paleontological resources *to occur*. Such mitigation measures have been proven to be effective in reducing adverse effects on fossils resulting from surface-disturbing projects on BLM land throughout the western United States. However, even in the most effective paleontological mitigation monitoring program, inadvertent damage to paleontological resources *could* occur*, if the resources are present*. This damage occurs at the point at which the fossils are uncovered by excavation equipment, and in cases in which fossils are not identified by paleontological monitors during excavation. The damage caused by construction equipment can typically be repaired in a paleontological laboratory. However, damage to fossils that are not identified by paleontological monitors represents an unavoidable adverse impact.

4.11 Public Health and Safety

This section describes effects on public health and safety and worker safety that could result from implementation of the proposed Desert Stateline Solar Farm facility (Proposed Action or Project) and under each alternative. The following discussion addresses potential environmental impacts associated with implementation of the proposed project, and recommends measures to reduce or avoid adverse impacts anticipated from construction, operation and maintenance, and decommissioning of the proposed facility and alternatives. A discussion of cumulative impacts related to public health and safety is also included in this section.

4.11.1 Methodology for Analysis

This analysis of direct and indirect impacts for the Proposed Action includes construction; operation and maintenance; and decommissioning. Based on the scope of the Proposed Action and alternatives, and the affected environment in which the project would be implemented, BLM considered potential impacts on the following issue areas: seismic hazards, hazardous materials and waste management, worker safety (including commuting to and from the worksite), and intentionally destructive acts.

Seismic and Geologic Hazards

The Proposed Action and alternatives are evaluated in terms of their susceptibility to geologic and seismic hazards. Potential effects on these resources are assessed based upon existing publications and maps completed by agencies such as the U.S. Geological Survey (USGS), California Geologic Survey, and California Division of Mines and Geology, as well as geologic studies conducted by the Applicant. The potential for damage to proposed structures or increased risk of injury due to geologic hazards was analyzed using available data from the aforementioned sources. The conclusions and recommendations in the Applicant's geotechnical investigation are evaluated and, where applicable, are incorporated into the analysis. Further analysis of the potential for impacts due to subsidence or expansive soils is evaluated in Section 4.14 (Soil Resources).

Hazardous Materials and Waste Management

In order to assess the potential for released hazardous materials and wastes to affect the public, this analysis evaluates several aspects of the proposed use of these materials at the facility, including:

- Use, storage, transport, and disposal of petroleum products and/or hazardous materials; and
- The potential to mobilize contaminants in the soil or groundwater, creating potential pathways of exposure to humans or wildlife that would result in exposure to contaminants at levels that would be expected to be harmful.

The hazardous materials that would be used during project construction and operations was defined in Table 4.11-1, and includes petroleum fuels (diesel and gasoline), motor oil, transformer oil, hydraulic fluid, and soil stabilizers. In addition, the PV panels themselves are composed of a cadmium-telluride (CdTe) material. This analysis was conducted by examining the choice and amount of chemicals to be used, the manner in which the Applicant would use the chemicals, the manner by which they would be transported to the facility, and the way in which the Applicant plans to store the materials on-site.

The Applicant has provided proposed measures that would be implemented as part of their proposed project (First Solar 2012b). These include:

- Any modules damaged or broken during construction or operation would be recycled into new modules or other products. The PV modules would be inspected and handled per First Solar's Broken PV Module Detection and Handling Plan. Any additional construction waste generated would be removed in accordance with applicable requirements. Specific waste disposal regulations and disposal locations are discussed in the Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b).
- Vegetation would be managed in an effort to minimize the potential for vegetative fuel build-up. *Fire prevention measures specified in the POD and the Emergency Response and Hazardous Materials Management Plan would be implemented.*
- The Applicant would implement their Emergency Response and Hazardous Materials Management Plan (First Solar 2012b) to address management of hazardous materials during construction.

Engineering and administrative controls concerning the use of hazardous materials are included as part of the Proposed Action. Engineering controls are the physical or mechanical systems, such as storage tanks or automatic shut-off valves, that can prevent the spill of hazardous material from occurring, or that can either limit the spill to a small amount or confine it to a small area. Administrative controls are the rules and procedures that workers at the facility must follow that would help to prevent accidents or to keep them small if they do occur. Engineering and administrative controls to be used by the Applicant are defined in the Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), which specifies measures associated with the management of onsite hazardous materials, fuels, and wastes generated during construction, operations, and decommissioning. This Plan includes the following elements:

- Identification of worker duties and responsibilities associated with emergency response;
- Employee training;
- Procedures for emergency response and incident reporting;
- Procedures for storing and handling hazardous materials;
- Procedures for waste characterization, recycling, and disposal; and
- Procedures for conducting inspections of hazardous materials and waste storage areas.

Emergency Response

The evaluation of the Proposed Action and alternatives includes an assessment of the potential for these actions to interfere with emergency response services.

Worker Safety

The Proposed Action and alternatives are evaluated to determine the manner in which they would protect worker health and safety, including compliance with federal, State, and local regulations associated with worker safety. This includes and evaluation regarding whether the Proposed Action or alternatives would expose workers to contaminated or hazardous materials at levels in excess of those permitted by the Federal Occupational Safety and Health

Administration (OSHA) in 29 CFR §1910 and California OSHA (CalOSHA) in CCR Title 8, or expose members of the public to direct or indirect contact with hazardous materials from Proposed Action construction or operations. The analysis also evaluates the potential risk to worker and public safety associated with increased traffic due to worker commuting and material deliveries.

Intentionally Destructive Acts

The potential for intentional destructive acts, such as sabotage or terrorism events, to cause impacts to human health and the environment, is discussed. As opposed to industrial hazards, collisions, and natural events, where it is possible to estimate event probabilities based on historical data and information, it is not possible to accurately estimate the probability of an act of terrorism or sabotage.

4.11.2 CEQA Significance Criteria

The following criteria were used to determine the significance of impacts under CEQA:

- PH&S-1: Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
  - ii. Strong seismic ground shaking; or
  - iii. Seismic-related ground failure, including liquefaction.
- PH&S-2: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- PH&S-3: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- PH&S-4: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 miles of an existing or proposed school.
- PH&S-5: Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would create a significant hazard to the public or the environment.
- PH&S-6: Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.
- PH&S-7: Comply with federal, state, and local statutes and regulations related to solid waste.

For the Proposed Action and alternatives, the criteria numbered PH&S-4 and PH&S-5 were determined to be inapplicable as the project area is not located within 0.25 miles of a school and is not on the Cortese List pursuant to Government Code § 65962.5 (DTSC 2012). Therefore, these criteria are not addressed further in the impact analysis presented in this section.

4.11.3 Alternative 1: Proposed Action

4.11.3.1 Direct and Indirect Impacts

To complete this analysis of environmental consequences associated with impacts on public health and safety, the BLM considered potential impacts associated with seismic hazards, hazardous materials, solid waste, worker safety, and intentionally destructive acts.

Construction

Seismic and Geologic Hazards

The potential for seismic and geologic hazards to be present at the project site was discussed in Section 3.11. In general, since the project site is located on a relatively flat area at the base of a stable alluvial fan, and adjacent to a dry lake bed, there is no risk of landslide that could affect project structures, or that could be caused by project construction. Similarly, because the project would not require construction of large occupied buildings, and all of the surrounding land is undeveloped, there is no risk of substantial damage to site structures or to nearby populations. To verify that seismic hazards would not affect the project, the Applicant would conduct preliminary site investigations as outlined in mitigation measure MM-PH&S-1.

As discussed in Section 3.11, the Centers for Disease Control (CDC) depicts the project area within the natural range of *Coccidioides* spp. fungi which cause valley fever (CDC 2012). No human health risk assessment exists for the project site and its landscape setting at present. Risks associated with contaminants or naturally occurring medical geologic hazards would occur through inhalation of dust. Mitigation measures designed to avoid or reduce air emissions for the Proposed Action are developed in Section 4.2, and these include the use of fugitive dust control measures. The Applicant would submit their fugitive dust control plan (First Solar 2012c) to the Mojave Desert Air Quality Management District for approval prior to beginning construction. The fugitive dust control measures would result in 90 percent reductions of emissions, and would thus reduce the potential for mobilization of naturally occurring medical geologic hazards.

Hazardous Materials and Waste Management

Hazardous Materials

Hazardous materials that would be used during the construction phase of the Stateline Solar Farm Project are outlined in Table 4.11-1 below:

Table 4.11-1. Hazardous Material Usage and Storage During Construction

Hazardous Material	Storage Volume During Construction
Diesel Fuel	5,000 gallons
Gasoline	5,000 gallons
30W Motor Oil	100 quarts
Transformer Oil (Mineral Oil)	From 0 gallons at beginning of construction up to 72,000 gallons at end of construction
Hydraulic Fluid and Lube Oil	500 gallons
Soil Stabilizer (ChlorTex Road Binder, Eccotex Soil Binder, or PlasTex Soil Stabilizer)	500 gallons

None of these materials would be expected to cause off-site impacts as a result of the limited quantities on-site, their relative toxicity, their physical states, and/or their environmental mobility. A review of the Material Safety Data Sheets (MSDSs) for the soil stabilizing products indicates that ChlorTex and PlasTex contain non-hazardous inorganic salts including magnesium chloride, calcium chloride, sodium chloride, magnesium nitrate, and calcium sulfate hemihydrates (Plaster of Paris). These materials would not be expected to have adverse impacts to public health and safety. The MSDS for EccoTex does not specify the chemical content of this product. Therefore, public health and safety impacts from the use of this product cannot be determined.

All hazardous materials that would be used during construction would be containerized, handled, transported, and disposed of according to federal and State regulations. The Applicant and its contractors would be required to maintain hazardous materials in proper storage containers and with sufficient secondary containment in accordance with Federal and State regulations. The Applicant would implement their Emergency Response and Hazardous Materials Management Plan (First Solar 2012b) and a Spill Prevention, Control, and Countermeasures (SPCC) Plan pursuant to mitigation measure MM-PH&S-2. Implementation of these plans would reduce the potential for spills to occur.

The potential exists for hazardous materials being used at the project site to be released into the desert washes and ephemeral streams that traverse the site; however, mitigation measure MM-PH&S-2 would require hazardous materials use and storage to occur at a distance from watercourses, which would reduce the potential for any spilled materials to enter watercourses. With implementation of mitigation measure MM-PH&S-2, impacts from the release of hazardous materials to desert washes and ephemeral streams would be reduced, but not completely avoided.

The potential also exists for motor vehicle fuel to be released from on-site storage tanks or for transformer oil to be released at the project substation if a leak were to occur, potentially resulting in a hazard to soil, water, wildlife, or personnel at the project site. The Applicant would be subject to a spill prevention and response plan *as part of MM-PH&S-2*, which requires a secondary means of containment for spills of large quantities of petroleum products used at the project site. Implementation of this plan would reduce impacts from the release of motor vehicle fuel or transformer oil. Impacts would be reduced, but not completely avoided.

In order to address spill response, the facility would implement *their* emergency response plan which includes information on hazardous materials contingency and emergency response procedures, spill containment and prevention systems, personnel training, spill notification, on-site spill containment, and prevention equipment and capabilities. Emergency procedures would be established which include evacuation, spill cleanup, hazard prevention, and emergency response.

Air Emissions

The operation of construction equipment would result in air emissions from diesel-fueled engines. Diesel exhaust contains over 40 substances that are listed by the EPA as hazardous air pollutants and by the CARB as toxic air contaminants. Exposure to diesel exhaust may cause both short- and long-term adverse health effects. Epidemiological studies also strongly suggest a causal relationship between occupational diesel exhaust exposure and lung cancer. Construction of the Stateline Solar Farm Project is estimated to take approximately two to four years with an operational life expectancy of 30 years (First Solar 2011). Assessment of chronic (long-term) health effects assumes continuous exposure to toxic substances over a significantly longer time period, typically from 8 to 70 years.

Mitigation measures designed to avoid or reduce air emissions for the Proposed Action are developed in Section 4.2. These include the use of fugitive dust control measures. The Applicant would submit their fugitive dust control plan (First Solar 2012c) to the Mojave Desert Air Quality Management District for approval prior to beginning construction. The fugitive dust control measures would result in 90 percent reductions of emissions. In order to further mitigate potential impacts from particulate emissions during the operation of diesel-powered construction equipment, ultra-low sulfur diesel fuel and Tier 3 California Emission Standards for Off-Road Compression-Ignition Engines would be used.

PV Modules

The proposed PV technology utilizes CdTe as the semiconductor material. In its elemental form, cadmium is a human carcinogen. However, in the First Solar modules, the cadmium in combined in a chemical compound with tellurium in the form of CdTe, and then sealed in between two plates of glass. CdTe itself has a low vapor pressure and water solubility, which result in low mobility if released into the environment. CdTe also has high boiling and melting points, which limit the potential for release as a result of a fire.

The French Ministry of Ecology, Energy, Sustainable Development, and the Sea performed an assessment of First Solar's CdTe PV program and concluded that, "During standard operation of CdTe PV systems, there are no cadmium emissions – to air, to water, or to soil. In the exceptional case of accidental fires or broken panels, scientific studies show that cadmium emissions remain negligible. Accordingly, large-scale deployment of CdTe PV can be considered safe to human health and the environment." (Lincot 2009).

The European Commission, Joint Research Center and sponsored by the German Environment Ministry Conducted a peer review three studies of the CdTe PV. The commission concluded "…CdTe used in PV is in an environmentally stable form that does not leak into the environment during normal use or foreseeable accidents, and therefore can be considered the environmentally safest current use of cadmium." Additionally, the commission reported that "…Large scale use of CdTe photovoltaic modules does not present any risks to public health and the environment." (Jager-Waldau 2005).

The Norwegian Geotechnical Institute conducted a literature review to evaluate emissions and potential effects of CdTe with respect to final disposal. The report noted that there is very little data on the biogeochemical properties of CdTe or the human toxicity of CdTe (Norwegian Geotechnical Institute 2010). The report noted that leaching of tellurium from crushed CdTe modules does occur at high pH levels, but that additional tests would be needed to determine if cadmium is mobilized at lower pH levels. The report concluded that uncontrolled dumping of CdTe could present environmental risks, but that the risk of uncontrolled spreading of Cd and Te contamination at approved landfills was considered to be low.

Sinha and others (2012) conducted a fate and transport analysis to determine potential exposure to cadmium from broken CdTe modules. The study assumed worst-case scenarios for several factors, including:

- Total release of Cd;
- Release from a rooftop installation as opposed to a ground installation. This was assumed to be conservative because rainwater runoff is more concentrated on a rooftop installation; and
- Comparison of results to human residential screening levels.

The analysis modeled concentrations of cadmium that would be released to soil, air, and groundwater, and found that results were one to six orders of magnitude below human health

screening levels in a California exposure scenario. The study concluded that potential exposures to cadmium from rainwater leaching of broken modules in a commercial building scenario was unlikely to pose a potential health risk to workers or offsite residents (Sinha and others 2012).

Zayed and Phillippe conducted a toxicological study to determine the median lethal concentration/dose of CdTe, and to compare that value to the toxicity of elemental cadmium. The report concluded that the CdTe compound was less toxic than cadmium alone (Zayed and Phillippe 2009).

In addition to these studies, BLM has evaluated studies which evaluate the potential for release of cadmium from CdTe modules as a result of a fire. Those studies are summarized in Section 4.21. That section concluded that potential release of cadmium during a fire is a very unlikely occurrence. The panels themselves contain no combustible material. The manner in which vegetation would be removed and managed throughout the operational period means that there would be no fuel sources located near the panels. Although electrical fires occur in substations, there would be no fuel or mechanism for such a fire to spread to the panels. Should a fire reach the panels, the glass-CdTe-glass construction of the panels would eliminate the potential for the release of cadmium.

First Solar PV modules are not regulated as hazardous materials subject to California or Federal hazardous material management regulations. Any modules damaged or broken during construction or operation would be collected and returned to First Solar's manufacturing facility in Ohio for recycling into new modules or other products, according to First Solar's Broken PV Module Detection and Handling Plan. At the end of their productive life, the modules would be classified as California hazardous waste, but not federal hazardous waste. The modules would be packaged and transported in accordance with California hazardous waste regulations, and then recycled under First Solar's Module Collection and Recycling Program.

In general, the studies cited above are not conclusive with respect to potential risks at the Stateline Project site because they do not provide a site-specific, long-term analysis of the potential for leaching of cadmium in a desert environment, nor do they evaluate the toxicity of released cadmium on site-specific environmental resources. However, the weight of evidence at this time strongly suggests that risks associated with the potential release of cadmium from the modules at the Proposed Project site is low.

Waste Management

Waste generated by project construction would include non-hazardous building debris, liquid wastes, and small quantities of liquid hazardous waste (First Solar 2011). Non-hazardous wastes would include sanitary wastewater; scrap wood, concrete, and miscellaneous packing materials; and dust suppression, drainage, and equipment wash water (First Solar 2011).

The Applicant would implement their Waste Management Plan (included as a subsection within their Emergency Response and Hazardous Materials Management Plan, [First Solar 2012b]) as part of mitigation measure MM-PH&S-2. Implementation of this plan would reduce the potential for releases from waste management activities. The Applicant would also be required to make the proper notifications of any impending enforcement actions related to waste management.

Small quantities of hazardous waste generated during construction that cannot be recycled would be placed in approved containers for transporting hazardous waste and transported under manifest by a licensed hazardous waste hauler to a permitted hazardous waste treatment or disposal facility in accordance with state and federal regulations. Waste lubricating oil would be recovered and recycled by a waste oil recycling contractor. Sanitary wastes generated during construction would be collected in portable, self-contained toilets and pumped

periodically for disposal at an appropriate facility (First Solar 2011). All non-hazardous wastes would be recycled to the extent possible and non-recyclable wastes would be collected by a licensed hauler and disposed in a solid waste disposal facility, in accordance with Title 14, California Code of Regulations, Sections 17200 et seq. Absent any unusual circumstances, project compliance with laws and regulations would be sufficient to ensure that no adverse impacts would occur as a result of project waste management activities.

Disturbance of Existing Contamination

Site disturbances occur during facility construction from excavation, grading, and earth moving. Such activities have the potential to adversely affect public health through various mechanisms, such as the creation of airborne dust, material being carried off site through soil erosion, and uncovering buried hazardous substances. The site is located in an undeveloped area and is not located on located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 (DTSC 2012). In the event that construction excavation, grading, or trenching activities for the Proposed Action encounter potentially contaminated soils and/or any specific handling, disposal, or other precautions that may be necessary pursuant to hazardous waste management laws and regulations, Mitigation measure MM-PH&S-3 would address any soil contamination contingency that may be encountered during construction of the project and would ensure compliance with laws and regulations.

Conclusions

Under NEPA, no impacts to the public or the environment through conventional use, storage, transportation, disposal of petroleum products and/or hazardous materials during construction are anticipated. All activities associated with hazardous materials are regulated and the Applicant and its contractors would be obligated to comply with these regulations. The potential for hazardous materials to be released from the project site would be very low, and the public would not be exposed to hazardous materials directly or indirectly.

Emergency Response

Although the solar PV panels and associated components contain few flammable components, the presence of electrical generating equipment and electrical cables, along with various oils (lubricating, cooling, and hydraulic) creates the potential for fire or a medical emergency within the facility. Storage and use of these substances may occur at the project substation, in electrical transmission structures, staging areas, and the O&M facility.

The project site is located in a rural area with several alternative access roads allowing easy access to the site in the event of an emergency. However, perimeter fencing and security gates could physically interfere with emergency vehicle access or personnel evacuation from the project site. During the construction phase, access roads would have gates or signs installed, as necessary, to control public access to the site for safety reasons.

If an emergency were to occur within the facility boundaries, heavy construction-related traffic could interfere with emergency response to the project site or emergency evacuation procedures in the event of an emergency such as a wildfire or a chemical spill at the project site. To ensure emergency access to the project site during construction, the Applicant would follow their Traffic Control Plan (First Solar 2012e) as required by mitigation measure MM-PH&S-4. This plan would require the Applicant to appoint an Emergency Response Liaison to coordinate the reduction of construction-related traffic for the duration of any emergency at or nearby the project site and preparation of a traffic management plan that includes assurance of

access for emergency vehicles to the project site. Implementation of the Traffic Control Plan would reduce impacts to emergency access, but impacts would not be completely avoided.

Given the rural nature of the facility, it is unlikely that project construction activities could affect the provision of emergency services to any other residence or business in the project vicinity.

Worker Safety

The Stateline Solar Farm Project would present a unique work environment that includes a solar field located in the high desert. Examples of potential hazards that could affect worker safety include:

- Exposure to hazardous materials and herbicides used during project construction, and dust generated as part of project construction;
- Exposure to loud noises;
- Falls, trips, burns, lacerations, and other injuries due to moving equipment, working in and near trenches, and confined space entry and egress;
- Exposure to falling equipment or structures, fires, explosions, and electrical sparks or electrocution.

Worker safety is regulated both by the Federal OSHA and CalOSHA. Construction safety orders are published at Title 8 of the California Code of Regulations, section 1502 et seq. These requirements are promulgated by CalOSHA and apply to the construction and operations phases of the project.

The Applicant would establish policies and procedures, training, and hazard recognition and controls to minimize these hazards and protect workers. By complying with all laws and regulations, workers would be adequately protected from health and safety hazards. The Applicant's health and safety program would be designed to minimize worker hazards during construction and operation of the project.

California regulations require personal protective equipment (PPE) and first aid supplies whenever hazards in the environment, or from chemicals or mechanical irritants, could cause injury or impair bodily function through absorption, inhalation, or physical contact (8 CCR § 3380 to 3400). All safety equipment would meet National Institute of Safety and Health (NIOSH) or ANSI standards and would carry markings, numbers, or certificates of approval. Respirators would meet NIOSH and CalOSHA standards. Each employee would be provided with the following information about protective clothing and equipment:

- Proper use, maintenance, and storage;
- When protective clothing and equipment are used;
- Benefits and limitations; and
- When and how protective clothing and equipment are replaced.

The PPE program would ensure that the Applicant complies with applicable requirements for PPE and provides employees with the information and training necessary to protect them from potential hazards in the workplace. Implementation of the *PPE program*, which is included as part of the Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), would be required as per mitigation measure MM-PH&S-2.

California regulations also require an emergency action plan (8 CCR § 3220). This plan, included as the Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b) addresses the following items:

- Emergency procedures for the protection of personnel, equipment, the environment, and materials;
- Fire and emergency reporting procedures;
- Response actions for accidents involving personnel and/or property;
- Response and reporting requirements for bomb threats;
- Site assembly and emergency evacuation route procedures;
- Natural disaster responses (for example, earthquakes, high winds, and flooding);
- Reporting and notification procedures for emergencies (including on-site, off-site, local authorities, and/or state jurisdictions);
- Alarm and communication systems needed for specific operations;
- Emergency personnel (response team) responsibilities and notification roster;
- Specifies emergency response equipment and strategic locations; and
- Training and instruction requirements and programs.

With respect to herbicides, mitigation measure MM-PH&S-5 would require the Applicant to implement their *Integrated* Weed Management Plan (First Solar *2013c*), which includes the following provisions:

- The development and implementation of BMPs for the storage and application of herbicides used to control weeds beneath and around the solar array.
- A BMP requiring proper herbicide storage and application would mitigate potential risks to workers from exposure to herbicides and reduce the chance that herbicides would contaminate either surface water or groundwater. The BMP should follow either the guidelines established by the EPA, or more recent guidelines established by the State of California or EPA.

The Integrated Weed Management Plan incorporates BLM's Herbicide Use Standard Operating Procedures as specified in Appendix B of the Record of Decision for the Final Vegetation Treatments Programmatic EIS (BLM 2007). Prior to their use, the Applicant would submit a Pesticide Use Proposal (PUP) as required by BLM guidelines. Within 24 hours of their use, the Applicant would submit the required Pesticide Application Record (PAR) to BLM.

Worker and public safety would also be affected by increased traffic conditions associated with worker commuting and material delivery during construction. The increase in traffic is evaluated in Section 4.16. During the peak of construction of the project, commuting and deliveries would result in an increase of 880 trips per day on I-15, which is approximately 2.5 percent of the current 37,000 Annual Average Daily Trips. The workers commuting to the site would likely be traveling from Las Vegas, approximately one hour away, and would also likely be commuting to the site in the early morning (before 7 am). While this would allow the increased commuting traffic to occur at a time when normal traffic is at a lower volume, the long commute at an early hour could also increase the potential for traffic accidents by site workers.

The Applicant's Emergency Response and Hazardous Materials Management Plan includes a module on vehicular accidents. Worker safety training for employees would include discussion of vehicle accident hazards.

Intentionally Destructive Acts

Depending on the severity of the event, fixed components of a solar power facility could be damaged or destroyed, resulting in economic, safety, and environmental consequences. Equipment used in constructing the solar facility could also be impacted, potentially resulting in loss of life. In general, the consequences of an intentionally destructive act, including sabotage or terrorist attack on a solar facility would be expected to be similar to those discussed under seismic hazards and hazardous materials regarding accidental and natural events. The potential consequences of such events would be site-specific and unlikely to occur. The Applicant's Plan of Development (First Solar 2011) and Emergency Response and Hazardous Materials Management Plan (First Solar 2012b) provide the requirements for site fencing, access control, and emergency procedures.

Operation and Maintenance

Seismic Hazards

Similar to the discussion provided above for construction, operations and maintenance activities would not be threatened, and would not cause the potential for, releases of materials or damage to structures due to a geologic event.

Hazardous Materials and Waste Management

Hazardous Materials

Hazardous materials that would be used during the operations and maintenance phase of the Stateline Solar Farm Project are outlined in Table 4.11-2 below:

Table 4.11-2. Hazardous Material Usage and Storage During Operations

Hazardous Material	Storage Volume During Operations
Diesel Fuel	0 gallons
Gasoline	5,000 gallons
30W Motor Oil	0 quarts
Transformer Oil (Mineral Oil)	72,000 gallons
Hydraulic Fluid and Lube Oil	100 gallons
Soil Stabilizer (ChlorTex Road Binder, Eccotex Soil Binder, or PlasTex Soil Stabilizer)	500 gallons

As discussed for construction, none of these materials would be expected to cause off-site impacts as a result of the limited quantities on-site, their relative toxicity, their physical states, and/or their environmental mobility. In general, the volumes of hazardous materials used on-site would be much lower than for construction, because fuels and oils associated with heavy equipment would not be present, and fuels and oils associated with other vehicle traffic would be much reduced. Similar to construction, the Applicant would implement their Emergency Response and Hazardous Materials Management Plan (First Solar 2012b) and a SPCC Plan pursuant to mitigation measure MM-PH&S-2. Implementation of these plans would reduce the potential for spills to occur.

As under construction, the potential exists for hazardous materials being used at the project site to be released into the desert washes and ephemeral streams that traverse the site; however,

mitigation measure MM-PH&S-2 would require hazardous materials use and storage to occur at a distance from watercourses, which would reduce the potential for any spilled materials to enter watercourses. With implementation of mitigation measure MM-PH&S-2, impacts from the release of hazardous materials to desert washes and ephemeral streams would be reduced, but not completely avoided.

The potential also exists for motor vehicle fuel to be released from on-site storage tanks or for transformer oil to be released at the project substation if a leak were to occur, potentially resulting in a hazard to soil, water, wildlife, or personnel at the project site. The Applicant would be subject to a spill prevention and response plan, which requires a secondary means of containment for spills of large quantities of petroleum products used at the project site. Implementation of this plan would reduce impacts from the release of motor vehicle fuel or transformer oil. Impacts would be reduced, but not completely avoided.

Air Emissions

There would not be any air emissions associated with operations, other than emissions from vehicles used to conduct inspection and maintenance activities. No dust would be generated once earth moving operations associated with construction are completed.

PV Modules

The contents of the PV modules, and their potential impacts during operations, would be the same as those discussed above for construction.

Waste Management

As discussed above under Construction, the Applicant would implement their Waste Management Plan (included as a subsection within their Emergency Response and Hazardous Materials Management Plan, [First Solar 2012b]) as part of mitigation measure MM-PH&S-2. No hazardous waste would be generated by the electric generating activities (First Solar 2011). Non-hazardous wastes would be minimal, and would primarily include office-related wastes generated at the O&M facility, food wastes from the maintenance crews who might be present on the project site during business hours, and sanitary wastes. During operation, sanitary wastes will be discharged to a permitted septic system. Waste volumes during operation are estimated to be no more than a few hundred gallons per day (First Solar 2011). All such wastes are expected to be nonhazardous, and would be containerized on-site and periodically removed by commercial haulers to existing off-site, appropriately permitted disposal facilities. No adverse impacts related to solid waste would occur.

Disturbance of Existing Contamination

No site disturbance would occur during operations.

Conclusions

Under NEPA, no impacts to the public or the environment through conventional use, storage, transportation, disposal of petroleum products and/or hazardous materials during operations are anticipated. All activities associated with hazardous materials are regulated and the Applicant and its contractors would be obligated to comply with these regulations. The potential

for hazardous materials to be released from the project site would be very low, and the public would not be exposed to hazardous materials directly or indirectly.

Emergency Response

As described under construction, the project site is located in a rural area with several alternative access roads allowing easy access to the site in the event of an emergency. Perimeter fencing and security gates could physically interfere with emergency vehicle access or personnel evacuation from the project site. However, during project operation and maintenance, minimal traffic is expected to occur and is not likely to interfere with emergency response activities. Similar to construction, it is unlikely that project operations could affect the provision of emergency services to any other residence or business in the project vicinity. The Applicant would follow their Traffic Control Plan (First Solar 2012e) as required by mitigation measure MM-PH&S-4. Mitigation measure MM-PH&S-4 would ensure that traffic associated with operations would not interfere with emergency response capability.

Worker Safety

As discussed above under Construction, the Applicant would implement their Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as would be required as per mitigation measure MM-PH&S-2. The primary activity conducted by site workers during operations and maintenance would include regular inspection of the solar array for broken or non-functioning PV modules, which would be conducted by driving up and down dirt paths between the rows of modules and even under the modules. Cleaning and servicing the modules would also be conducted on a routine schedule. All these activities would take place year-round, including during the summer months of peak solar power generation, when outside ambient temperatures routinely reach 115 °F and above.

Worker and public safety would also be affected by increased traffic conditions associated with worker commuting and material delivery during operations. The increase in traffic is evaluated in Section 4.16. During operations, the number of daily trips would be approximately ten. This number is minimal compared to the approximately 37,000 daily trips already occurring on I-15, and therefore the increased risk to worker and public safety would be low.

Intentionally Destructive Acts

Depending on the severity of the event, fixed components of a solar facility could be damaged or destroyed, resulting in economic, safety, and environmental consequences. Equipment used in servicing the solar facility could also be impacted, potentially resulting in loss of life. In general, the consequences of an intentionally destructive act, including sabotage or terrorist attack on a solar facility would be expected to be similar to those discussed under seismic hazards and hazardous materials regarding accidental and natural events. The potential consequences of such events would be site-specific and unlikely to occur.

Decommissioning

The decommissioning of the project would be similar to the construction activities described earlier, and would include demolition and removal of above-ground and subsurface facilities and site contouring and restoration. However, the duration of decommissioning would be shorter than the duration of construction.

Seismic Hazards

Potential seismic hazard impacts during decommissioning would be the same as those described for construction for the Proposed Action.

Hazardous Materials and Waste Management

The closure or decommissioning of the Stateline Solar Farm Project would produce hazardous and non-hazardous solid and liquid waste. The components of the facility would include materials that are mostly recyclable, including glass, CdTe semiconductor material, steel, wiring, and building materials. Most of the components of the panels, including glass, steel, and the semi-conductor material are recyclable. First Solar operates a pre-funded Collection and Recycling Program which ensures that, once the project is ended, PV panels are removed and recycled, thus reducing the amount of municipal waste generated. Upon the sale of PV panels, First Solar collects and sets aside funds to meet future packaging, shipping, and recycling costs. The funding is set aside in restricted investment accounts under a trust arrangement. Each panel is assigned a registration number for future tracking. The modules are labeled, in six languages, with the information necessary to allow the users to contact First Solar and return the panels free of charge. As collected, the panels are recycled into new panels.

The requirements for handling of hazardous materials remain in effect until such materials are removed from the site, regardless of facility closure. Therefore, the Applicant would be responsible for continuing to handle such materials in a safe manner, as required by applicable laws. In the event that the facility owner abandons the facility in a manner that poses a risk to surrounding populations, BLM would coordinate with the California Office of Emergency Services, San Bernardino County Fire Department, and the California Department of Toxic Substances Control (DTSC) to ensure that any unacceptable risk to the public is eliminated. Funding for such emergency action as well as site removal, rehabilitation and revegetation activities would be available from a performance bond required of the Applicant by BLM in accordance with mitigation measure MM-PH&S-6.

Emergency Response

Potential impacts to emergency response during decommissioning would be the same as those described for construction for the Proposed Action.

Worker Safety

Potential impacts to worker safety during decommissioning would be the same as those described for construction for the Proposed Action.

Intentionally Destructive Acts

Potential impacts from intentionally destructive acts, including sabotage or terrorism during decommissioning would be the same as those described for construction for the Proposed Action.

Modify Boundary of Ivanpah DWMA

Modification of the Ivanpah DWMA boundary would not result in the use of hazardous materials or generation of wastes. Therefore, no adverse impacts to public health and safety would occur.

4.11.3.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operations and Maintenance, and Decommissioning) are presented below based on the CEQA Significance Criteria. Only those significance criteria which were determined to be relevant to the project are addressed below:

PH&S-1

Construction

The project site is not located within an Alquist-Priolo Special Studies Zone, and there is no other evidence that the proposed site has a high potential for ground shaking or liquefaction. Impacts would be less than significant.

Operation and Maintenance

Potential seismic hazard impacts during operation and maintenance of the Proposed Action would be the same as described above under “Construction”. Impacts would be less than significant.

Decommissioning

Potential seismic hazard impacts during decommissioning of the Proposed Action would be the same as described above under “Construction”. Impacts would be less than significant.

PH&S-2

Construction

During construction, no hazards to the public or the environment would be posed by routine transportation, use, or disposal of hazardous materials and wastes. Routine storage, handling, and disposal requirements for these materials would be governed by the Applicant’s Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), developed in accordance with mitigation measure MM-PH&S-2, which would ensure that hazardous materials and wastes would be handled in a safe and environmentally sound manner to prevent releases and in compliance with the requirements set forth in the applicable codes and regulations. During routine use, there would be no exposure of the public or the environment to these materials.

Herbicides would be used for noxious weed control at the Stateline Solar Farm Project. Herbicides used for weed control could result in adverse health effects to the public, maintenance personnel, wildlife, or sensitive vegetation if herbicides are handled improperly or chemical drift occurs away from the target area during routine use. The Applicant would implement their *Integrated* Weed Management Plan (First Solar *2013c*) as required by mitigation measure MM-PH&S-5. Implementation of the plan would minimize or avoid impacts

from herbicide use. Potential impacts from herbicide use would be less than significant with mitigation.

Workers could potentially be exposed to hazardous materials and waste as a result of their routine use during construction. To ensure worker health and safety during construction, the Applicant would implement the health and safety components of their Emergency Response and Hazardous Materials Management Plan (First Solar 2012b) as required by mitigation measure MM-PH&S-2. All employees would receive training in the use and handling of hazardous materials. A material safety data sheet would be stored with each material.

Potential impacts from hazardous materials and hazardous waste would be less than significant with mitigation.

Operation and Maintenance

The Proposed Action would result in the use of a limited amount of hazardous material during operation and maintenance. The routine use, storage, and disposal of hazardous materials and waste associated with the Proposed Action would not result in potential adverse health and environmental impacts associated with routine management of these materials. Potential impacts would be the same as described above under ‘Construction”. With implementation of the Applicant’s Emergency Response and Hazardous Materials Management Plan (First Solar 2012b) as required by mitigation measure MM-PH&S-2, the Proposed Action would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts from the Proposed Action would be less than significant.

Decommissioning

The Proposed Action would result in the use of a limited amount of hazardous material during decommissioning. The routine use, storage, and disposal of hazardous materials and waste associated with the Proposed Action would not result in potential adverse health and environmental impacts associated with routine management of these materials. Potential impacts would be the same as described above under ‘Construction”. With implementation of the Applicant’s Emergency Response and Hazardous Materials Management Plan (First Solar 2012b) as required by mitigation measure MM-PH&S-2, the Proposed Action would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts from the Proposed Action would be less than significant.

PH&S-3

Construction

Construction of the Proposed Action could result in a potential hazard to the public or personnel if a hazardous material spill or leak were to occur. Implementation of the Applicant’s Emergency Response and Hazardous Materials Management Plan (First Solar 2012b) would delineate storage areas for hazardous material and hazardous waste; describe proper handling, storage, and disposal techniques; describe methods to be used to avoid spills and minimize impacts in the event of a spill; describe procedures for handling and disposing of unanticipated hazardous materials encountered during construction; and establish public and agency notification procedures for spills and other emergencies, including fires. The Applicant would also implement mitigation measure MM-PH&S-3 to further reduce potential impacts by requiring the construction contractor to stop work if suspected contamination is identified, cordon off areas of

suspected contamination, take appropriate health and safety measures, have a trained individual conduct sampling and testing or suspected material, and, if contamination is found to be greater than regulatory limits, notify the agencies.

Direct impacts of a release could include contamination of vegetation, soil, and water, which could result in indirect impacts to human and wildlife populations. The Applicant's use of appropriate spill containment and cleanup kits would contain accidental hazardous material releases and implementation of the Applicant's SPCC Plan would ensure that the Applicant minimizes, avoids, or cleans up unforeseen spills of hazardous material. The Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, would ensure that hazardous materials and wastes would be handled in a safe and environmentally sound manner to prevent releases and in compliance with the requirements set forth in the applicable codes and regulations. Best management practices by the Applicant as presented in the SPCC Plan would ensure that the Applicant minimizes, avoids, or cleans up unforeseen spills of hazardous material.

During construction, wildfires may be caused by combustion of native materials, smoking, and refueling and operating vehicles and other equipment off road. Combustion of fuel oil, hydraulic fluid, mineral oil, insulating fluid at the project power plant switchyard, flammable liquids, explosions, and overheated equipment, may cause small fires. The Applicant's fire protection program, included in the Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), would establish standards and practices that would minimize the risk of a fire and, in the event of fire, provide for immediate suppression and notification. Potential impacts from fires would be less than significant with mitigation

Operation and Maintenance

The potential exists for hazardous materials being used at the project site during operation and maintenance to be released into the desert washes and ephemeral streams that traverse the site. The potential also exists for motor vehicle fuel to be released from on-site storage tanks or for transformer oil to be released at the project substation if a leak were to occur, potentially resulting in a hazard to soil, water, wildlife, or personnel at the project site.

Implementation of the Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b) and SPCC Plan as required by mitigation measure MM-PH&S-2 would ensure that the Proposed Action would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accidental conditions involving the release of hazardous materials into the environment. Additionally, with implementation of the health and safety components of the Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), the Proposed Action would not expose workers to contaminated or hazardous materials at levels in excess of those permitted by the Federal OSHA in CFR 29, Part 1910, and the CalOSHA in CCR Title 8, or expose members of the public to direct or indirect contact with hazardous materials from project operations. Impacts from the release of hazardous materials associated with the Proposed Action would be less than significant.

Decommissioning

The potential exists for hazardous materials being used at the project site during decommissioning to be released into the desert washes and ephemeral streams that traverse the site. The potential also exists for motor vehicle fuel to be released from on-site storage tanks or for transformer oil to be released at the project substation if a leak were to occur, potentially resulting in a hazard to soil, water, wildlife, or personnel at the project site.

Implementation of the Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b) and SPCC Plan as required by mitigation measure MM-PH&S-2 would ensure that the Proposed Action would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accidental conditions involving the release of hazardous materials into the environment. Additionally, with implementation of the health and safety components of the Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), the Proposed Action would not expose workers to contaminated or hazardous materials at levels in excess of those permitted by the Federal OSHA in CFR 29, Part 1910, and the CalOSHA in CCR Title 8, or expose members of the public to direct or indirect contact with hazardous materials from project decommissioning. Impacts from the release of hazardous materials associated with the Proposed Action would be less than significant.

PH&S-6

Construction

Construction of the Stateline Solar Farm Project has the potential for impairing implementation of San Bernardino County adopted emergency evacuation and emergency response plans. During construction, activities could affect traffic and emergency routes, including equipment and material delivery. Project traffic during construction could interfere with emergency response to the project site or emergency evacuation procedures in the event of an emergency such as a wildfire or a chemical spill at the project site. Perimeter fencing and security gates could physically interfere with emergency vehicle access or personnel evacuation from the project site. With implementation of the Applicant's emergency action plan as part of the Traffic Control Plan (First Solar 2012e), as required by mitigation measure MM-PH&S-4, potential impacts would be less than significant with mitigation.

Operation and Maintenance

Although the solar facility would contain relatively few flammable components, the presence of electrical generating equipment and electrical cables, along with various oils (lubricating, cooling, and hydraulic) creates the potential for fire or a medical emergency. During operations and maintenance, activities could affect traffic and emergency routes, including equipment and material delivery. Perimeter fencing and security gates could physically interfere with emergency vehicle access or personnel evacuation from the project site. The Applicant would implement their emergency action plan as part of their Emergency Response and Hazardous Materials Management Plan (First Solar 2012b). Potential impacts would be less than significant with mitigation.

Decommissioning

Although the solar facility would contain relatively few flammable components, the presence of electrical generating equipment and electrical cables, along with various oils (lubricating, cooling, and hydraulic) creates the potential for fire or a medical emergency. During decommissioning, activities could affect traffic and emergency routes, including equipment and material delivery. Perimeter fencing and security gates could physically interfere with emergency vehicle access or personnel evacuation from the project site. The Applicant would implement their emergency action plan as part of their Emergency Response and Hazardous Materials Management Plan (First Solar 2012b). Potential impacts would be less than significant with mitigation.

PH&S-7

Construction

Construction of the Stateline Solar Farm Project would not generate solid waste in a volume that exceeds the capacity of existing facilities. The California Solid Waste Reuse and Recycling Access Act of 1991, as amended, requires expanded or new development projects to incorporate storage areas for recycling bins into the Project design. The Applicant would implement a recycling program as part of their waste management program, as outlined in their Emergency Response and Hazardous Materials Management Plan (First Solar 2012b). The Applicant would contract with a recycler or waste hauler to transport waste to a regional offsite recycling facility. Reuse and recycling of construction debris would reduce operating expenses and save valuable landfill space. Implementation of the Applicant's pre-funded PV Module Recycling Program would ensure that most project components are eventually recycled, and not disposed in solid waste landfills. Potential impacts would be less than significant with mitigation.

Operation and Maintenance

Operations of the Stateline Solar Farm Project would not generate solid waste in a volume that exceeds the capacity of existing facilities. The California Solid Waste Reuse and Recycling Access Act of 1991, as amended, requires expanded or new development projects to incorporate storage areas for recycling bins into the Project design. The Applicant would implement a recycling program that is included in the waste management sections of their Emergency Response and Hazardous Materials Management Plan (First Solar 2012b). The Applicant would contract with a recycler or waste hauler to transport waste to a regional offsite recycling facility. Reuse and recycling of construction debris would reduce operating expenses and save valuable landfill space. Potential impacts would be less than significant with mitigation.

Decommissioning

The generation of wastes associated with decommissioning would not generate solid waste in a volume that exceeds the capacity of existing facilities. Most project components, including the PV modules, would be recycled under a pre-funded program. The Applicant would contract with a recycler or waste hauler to transport waste to a regional offsite recycling facility. Reuse and recycling of construction debris would reduce operating expenses and save valuable landfill space. Potential impacts would be less than significant with mitigation.

4.11.4 Alternative 2: 2,385 Ac Alternative

4.11.4.1 Direct and Indirect Impacts

This analysis of the direct and indirect impacts for Alternative 2 is organized according to the following project phases: construction; operations and maintenance; and decommissioning.

The project components to be constructed under Alternative 2 are the same as in the Proposed Action, but the project area for Alternative 2 is 242 acres greater than the Proposed Action. The potential impacts during construction, and operation and maintenance, and decommissioning of Alternative 2 would be similar to those as described for the Proposed Action and would be subject to the same requirements and mitigation measures.

Construction

Seismic Hazards

Potential seismic hazard impacts during construction of Alternative 2 would be the same as described under "Construction" for the Proposed Action. Although the project site would include a different land area, the modified land area does not include any additional geologic or seismic hazards. Implementation of mitigation measure MM-PH&S-1 would reduce the potential for failure of project structures from seismic hazards, but impacts would not be completely avoided.

Hazardous Materials and Waste Management

Potential hazardous materials impacts during construction of Alternative 2 would be the same as described under "Construction" for the Proposed Action and would be subject to the same requirements and mitigation measures. Although Alternative 2 would involve a different land area and larger amount of acreage, the types and quantities of hazardous materials and wastes would be about the same as those of the Proposed Action.

Emergency Response

Potential impacts to emergency response during construction of Alternative 2 would be the same as described under "Construction" for the Proposed Action and would be subject to the same requirements and mitigation measures. Although Alternative 2 would involve a different land area and larger amount of acreage, the different project configuration is not expected to have any different affect on emergency response capability than the Proposed Action. Implementation of the Applicant's Traffic Control Plan (First Solar 2012e) as required by mitigation measure MM-PH&S-4 would reduce potential impacts to emergency access, but impacts would not be completely avoided.

Worker Safety

Potential impacts to worker safety during construction of Alternative 2 would be the same as described under "Construction" for the Proposed Action.

Intentionally Destructive Acts

Potential impacts from intentionally destructive acts, including sabotage or terrorism during construction of Alternative 2, would be the same as described under "Construction" for the Proposed Action.

Operation and Maintenance

Seismic Hazards

Potential seismic hazard impacts during operation and maintenance of Alternative 2 would be the same as described under "Operation and Maintenance" for the Proposed Action. Although the project site would include a different land area, the modified land area does not include any additional geologic or seismic hazards.

Hazardous Materials and Waste Management

Potential hazardous materials impacts during operation and maintenance of Alternative 2 would be the same as described under "Operation and Maintenance" for the Proposed Action. Although Alternative 2 would involve a different land area and larger amount of acreage, the types and quantities of hazardous materials and wastes would be about the same as those of the Proposed Action and would be subject to the same requirements and mitigation measures.

Emergency Response

Potential impacts to emergency response during operation and maintenance of Alternative 2 would be the same as described under "Operation and Maintenance" for the Proposed Action. During project operation and maintenance, minimal traffic is expected to occur and is not likely to interfere with emergency response activities. Although Alternative 2 would involve a different land area and larger amount of acreage, the different project configuration is not expected to have any different affect on emergency response capability than the Proposed Action.

Worker Safety

Potential impacts to worker safety during operation and maintenance of Alternative 2 would be the same as described under "Operations and Maintenance" for the Proposed Action. Although Alternative 2 would involve a different land area and larger amount of acreage, the potential hazards to site workers would be the same as those of the Proposed Action and would be subject to the same requirements and mitigation measures.

Intentionally Destructive Acts

Potential impacts from intentionally destructive acts, including sabotage or terrorism during operation and maintenance of Alternative 2 would be the same as described under "Operation and Maintenance" for the Proposed Action.

Decommissioning

Seismic Hazards

Potential seismic hazard impacts during decommissioning of Alternative 2 would be the same as described under "Decommissioning" for the Proposed Action. Although the project site would include a different land area, the modified land area does not include any additional geologic or seismic hazards. .

Hazardous Materials and Waste Management

Potential hazardous materials impacts during decommissioning of Alternative 2 would be the same as described under "Decommissioning" for the Proposed Action and would be subject to the same requirements and mitigation measures. Although Alternative 2 would involve a different land area and larger amount of acreage, the types and quantities of hazardous materials and wastes would be about the same as those of the Proposed Action..

Emergency Response

Potential impacts to emergency response during decommissioning of Alternative 2 would be the same as described under "Decommissioning" for the Proposed Action.

Worker Safety

Potential impacts to worker safety during decommissioning of Alternative 2 would be the same as described under "Decommissioning" for the Proposed Action.

Intentionally Destructive Acts

Potential impacts from intentionally destructive acts, including sabotage or terrorism during decommissioning of Alternative 2 would be the same as described under "Decommissioning" for the Proposed Action.

Modify Boundary of Ivanpah DWMA

Modification of the Ivanpah DWMA boundary would not result in the use of hazardous materials or generation of wastes. Therefore, no adverse impacts to public health and safety would occur.

4.11.4.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) would be the same as described above for the Proposed Action, based on the CEQA Significance Criteria presented in Section 4.11.2. Potential impacts of Alternative 2 would be less than significant.

4.11.5 *Revised* Alternative 3: *1,685* Ac Alternative

4.11.5.1 Direct and Indirect Impacts

The project components to be constructed under *Revised* Alternative 3 are the same as in the Proposed Action, but the project area for *Revised* Alternative 3 is *458 ac smaller* than the Proposed Action. The potential impacts during construction, and operation and maintenance, and decommissioning of *Revised* Alternative 3 would be similar to those as described for the Proposed Action and would be subject to the same requirements and mitigation measures.

Construction

Seismic Hazards

Potential seismic hazard impacts during construction of *Revised* Alternative 3 would be the same as described under "Construction" for the Proposed Action. Although the project site would include a different land area, the modified land area does not include any additional geologic or seismic hazards. Implementation of mitigation measure MM-PH&S-1 would reduce the potential for failure of project structures from seismic hazards, but impacts would not be completely avoided.

Hazardous Materials and Waste Management

Potential hazardous materials impacts during construction of *Revised* Alternative 3 would be the same as described under "Construction" for the Proposed Action, and would be subject to the same requirements and mitigation measures. Although *Revised* Alternative 3 would involve a different land area and *smaller* amount of acreage, the types and quantities of hazardous materials and wastes would be about the same as those of the Proposed Action.

Emergency Response

Potential impacts to emergency response during construction of *Revised* Alternative 3 would be the same as described under "Construction" for the Proposed Action and would be subject to the same requirements and mitigation measures. Although *Revised* Alternative 3 would involve a different land area and *smaller* amount of acreage, the different project configuration is not expected to have any different affect on emergency response capability than the Proposed Action. Implementation of the Applicant's Traffic Control Plan (First Solar 2012e) as required by mitigation measure MM-PH&S-4 would reduce potential impacts to emergency access, but impacts would not be completely avoided.

Worker Safety

Potential impacts to worker safety during construction of *Revised* Alternative 3 would be the same as described under "Construction" for the Proposed Action.

Intentionally Destructive Acts

Potential impacts from intentionally destructive acts, including sabotage or terrorism during construction of *Revised* Alternative 3, would be the same as described under "Construction" for the Proposed Action.

Operation and Maintenance

Seismic Hazards

Potential seismic hazard impacts during operation and maintenance of *Revised* Alternative 3 would be the same as described under "Operation and Maintenance" for the Proposed Action. Although the project site would include a different land area, the modified land area does not include any additional geologic or seismic hazards. Implementation of mitigation measure MM-PH&S-1 would reduce the potential for failure of project structures from seismic hazards, but impacts would not be completely avoided.

Hazardous Materials and Waste Management

Potential hazardous materials impacts during operation and maintenance of *Revised* Alternative 3 would be the same as described under "Operation and Maintenance" for the Proposed Action. Although *Revised* Alternative 3 would involve a different land area and *smaller* amount of acreage, the types and quantities of hazardous materials and wastes would be about the same as those of the Proposed Action and would be subject to the same requirements and mitigation measures.

Emergency Response

Potential impacts to emergency response during operation and maintenance of *Revised* Alternative 3 would be the same as described under "Operation and Maintenance" for the Proposed Action. During project operation and maintenance, minimal traffic is expected to occur and is not likely to interfere with emergency response activities. Although *Revised* Alternative 3 would involve a different land area and *smaller* amount of acreage, the different project configuration is not expected to have any different affect on emergency response capability than the Proposed Action.

Worker Safety

Potential impacts to worker safety during operation and maintenance of *Revised* Alternative 3 would be the same as described under "Operations and Maintenance" for the Proposed Action. Although *Revised* Alternative 3 would involve a different land area and *smaller* amount of acreage, the potential hazards to site workers would be the same as those of the Proposed Action and would be subject to the same requirements and mitigation measures.

Intentionally Destructive Acts

Potential impacts from intentionally destructive acts, including sabotage or terrorism during operation and maintenance of *Revised* Alternative 3 would be the same as described under "Operation and Maintenance" for the Proposed Action.

Decommissioning

Seismic Hazards

Potential seismic hazard impacts during decommissioning of *Revised* Alternative 3 would be the same as described under "Decommissioning" for the Proposed Action. Although the project site would include a different land area, the modified land area does not include any additional geologic or seismic hazards.

Hazardous Materials and Waste Management

Potential hazardous materials impacts during decommissioning of *Revised* Alternative 3 would be the same as described under "Decommissioning" for the Proposed Action and would be subject to the same requirements and mitigation measures. Although *Revised* Alternative 3 would involve a different land area and *smaller* amount of acreage, the types and quantities of hazardous materials and wastes would be about the same as those of the Proposed Action.

Emergency Response

Potential impacts to emergency response during decommissioning of *Revised* Alternative 3 would be the same as described under "Decommissioning" for the Proposed Action.

Worker Safety

Potential impacts to worker safety during decommissioning of *Revised* Alternative 3 would be the same as described under "Decommissioning" for the Proposed Action.

Intentionally Destructive Acts

Potential impacts from intentionally destructive acts, including sabotage or terrorism during decommissioning of *Revised* Alternative 3 would be the same as described under "Decommissioning" for the Proposed Action.

Modify Boundary of Ivanpah DWMA

Modification of the Ivanpah DWMA boundary would not result in the use of hazardous materials or generation of wastes. Therefore, no adverse impacts to public health and safety would occur.

4.11.5.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) would be the same as described above for the Proposed Action, Alternative 1, based on the CEQA Significance Criteria presented in Section 4.11.2. Potential impacts of *Revised* Alternative 3 would be less than significant.

4.11.6 Alternative 4: Reduced Acreage Alternative

4.11.6.1 Direct and Indirect Impacts

Alternative 4 is conceptually similar to the Proposed Action (Alternative 1), but would be placed within a different land area which comprises 1,766 acres. The land area associated with Alternative 4 would be the same as the northern portion of the bifurcated footprint of Alternative 2. The project components to be constructed under Alternative 4 are the same as in the Proposed Action, but the project area for Alternative 4 is 377 acres less than the Proposed Action. The potential impacts during construction, and operation and maintenance, and decommissioning of Alternative 4 would be similar to those as described for the Proposed Action and would be subject to the same requirements and mitigation measures.

Construction

Seismic Hazards

Potential seismic hazard impacts during construction of Alternative 4 would be the same as described under "Construction" for the Proposed Action. Although the project site would include a different land area, the modified land area does not include any additional geologic or seismic hazards. Implementation of mitigation measure MM-PH&S-1 would reduce the potential for failure of project structures from seismic hazards, but impacts would not be completely avoided.

Hazardous Materials and Waste Management

Potential hazardous materials impacts during construction of Alternative 4 would be the same as described under "Construction" for the Proposed Action and would be subject to the same requirements and mitigation measures. Although Alternative 4 would involve a different land area and smaller amount of acreage, the types and quantities of hazardous materials and wastes would be about the same as those of the Proposed Action.

Emergency Response

Potential impacts to emergency response during construction of Alternative 4 would be the same as described under "Construction" for the Proposed Action and would be subject to the same requirements and mitigation measures. Although Alternative 4 would involve a different land area and smaller amount of acreage, the different project configuration is not expected to have any different affect on emergency response capability than the Proposed Action. Implementation of the Applicant's Traffic Control Plan (First Solar 2012e) as required by mitigation measure MM-PH&S-4 would reduce potential impacts to emergency access, but impacts would not be completely avoided.

Worker Safety

Potential impacts to worker safety during construction of Alternative 4 would be the same as described under "Construction" for the Proposed Action.

Intentionally Destructive Acts

Potential impacts from intentionally destructive acts, including sabotage or terrorism during construction of Alternative 4, would be the same as described under "Construction" for the Proposed Action.

Operation and Maintenance

Seismic Hazards

Potential seismic hazard impacts during operation and maintenance of Alternative 4 would be the same as described under "Operation and Maintenance" for the Proposed Action. Although the project site would include a different land area, the modified land area does not include any additional geologic or seismic hazards.

Hazardous Materials and Waste Management

Potential hazardous materials impacts during operation and maintenance of Alternative 4 would be the same as described under "Operation and Maintenance" for the Proposed Action. Although Alternative 4 would involve a different land area and smaller amount of acreage, the types and quantities of hazardous materials and wastes would be about the same as those of the Proposed Action and would be subject to the same requirements and mitigation measures.

Emergency Response

Potential impacts to emergency response during operation and maintenance of Alternative 4 would be the same as described under "Operation and Maintenance" for the Proposed Action. During project operation and maintenance, minimal traffic is expected to occur and is not likely to interfere with emergency response activities. Although Alternative 4 would involve a different land area and smaller amount of acreage, the different project configuration is not expected to have any different affect on emergency response capability than the Proposed Action.

Worker Safety

Potential impacts to worker safety during operation and maintenance of Alternative 4 would be the same as described under "Operations and Maintenance" for the Proposed Action. Although Alternative 4 would involve a different land area and smaller amount of acreage, the potential hazards to site workers would be the same as those of the Proposed Action and would be subject to the same requirements and mitigation measures.

Intentionally Destructive Acts

Potential impacts from intentionally destructive acts, including sabotage or terrorism during operation and maintenance of Alternative 4 would be the same as described under "Operation and Maintenance" for the Proposed Action.

Decommissioning

Seismic Hazards

Potential seismic hazard impacts during decommissioning of Alternative 4 would be the same as described under "Decommissioning" for the Proposed Action. Although the project site would include a different land area, the modified land area does not include any additional geologic or seismic hazards.

Hazardous Materials and Waste Management

Potential hazardous materials impacts during decommissioning of Alternative 4 would be the same as described under "Decommissioning" for the Proposed Action and would be subject to the same requirements and mitigation measures. Although Alternative 4 would involve a different land area and smaller amount of acreage, the types and quantities of hazardous materials and wastes would be about the same as those of the Proposed Action.

Emergency Response

Potential impacts to emergency response during decommissioning of Alternative 4 would be the same as described under "Decommissioning" for the Proposed Action.

Worker Safety

Potential impacts to worker safety during decommissioning of Alternative 4 would be the same as described under "Decommissioning" for the Proposed Action.

Intentionally Destructive Acts

Potential impacts from intentionally destructive acts, including sabotage or terrorism during decommissioning of Alternative 4 would be the same as described under "Decommissioning" for the Proposed Action.

Modify Boundary of Ivanpah DWMA

Modification of the Ivanpah DWMA boundary would not result in the use of hazardous materials or generation of wastes. Therefore, no adverse impacts to public health and safety would occur.

4.11.6.2 CEQA Significance Determinations

Alternative 4 would not result in significant impacts to public health and safety. In addition, Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

4.11.7 Alternative 5: No Action Alternative

4.11.7.1 Direct and Indirect Impacts

Under this alternative, the proposed Project would not be approved and the BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no ground disturbance. As a result, impacts caused by the potential effects of hazardous materials and wastes to public health and safety and the environment would not occur.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under the No Action Alternative. Land uses associated with the Ivanpah DWMA would continue as they are today. Because this action would not be taken, there would be no potential impacts to public health and safety.

4.11.7.2 CEQA Significance Determinations

Alternative 5 would not result in impacts to public health and safety.

4.11.8 Alternative 6: No Project, Exclude Solar Alternative

4.11.8.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. Because the CDCA Plan would be amended so no solar energy projects can be approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. Therefore, *the potential impacts associated with the Proposed Action would not occur.*

Modify Boundary of Ivanpah DWMA

Modification of the Ivanpah DWMA boundary would not result in the use of hazardous materials or generation of wastes. Therefore, no adverse impacts to public health and safety would occur.

4.11.8.2 CEQA Significance Determinations

Alternative 6 would not result in impacts to public health and safety.

4.11.9 Alternative 7: No Project, Approve Solar Alternative

4.11.9.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. Under this alternative, the BLM would not approve the proposed facility, but would amend the CDCA Plan to allow for other solar projects on the site. *Therefore, the potential impacts associated with the Proposed Action would not occur under this alternative.*

As a result *of the Plan amendment*, it is possible that another solar energy project could be constructed on the site *utilizing* the same or a different solar technology*, and producing similar impacts to public health and safety of the Proposed Action. However, the impacts associated with such future project are speculative at this time and would be subject to independent CEQA and NEPA analysis at that time.*

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 7. Land uses associated with the Ivanpah DWMA would continue as they are today. If a solar or other renewable energy facility is proposed on the site in the future, the impact on public health and safety would be considered in a project-specific environmental analysis that would occur at that time.

4.11.9.2 CEQA Significance Determinations

Alternative 7 would not result in impacts to public health and safety.

4.11.10 Cumulative Impacts

4.11.10.1 Geographic Extent/Context

The geographic scope for cumulative impacts from public health and safety is San Bernardino County, where potential waste disposal facilities for the project are located. This area also includes potential interference with emergency response to fire, medical emergencies and hazardous materials spills or leaks. During the 2 to 4-year period of construction for the proposed facility, interference with emergency response vehicles could result from construction traffic of the proposed facility and other projects in the area in locations relatively remote from the project site, whereas hazardous materials impacts and other hazards discussed in this section are typically highly localized *to the location of a particular project, such that they are unlikely to have synergistic effects with other actions.*

4.11.10.2 Existing Cumulative Conditions

The project area consists of undeveloped land and open space land. Within the undeveloped and open space land there is little likelihood of significant soil or groundwater contamination, based on a lack of uses that would involve hazardous materials.

4.11.10.3 Reasonably Foreseeable Projects

A wide variety of past and present development projects could contribute to the cumulative conditions for public health and safety in regards to emergency response in the cumulative analysis area. Tables 4.1-1 and 4.1-2, presented in Section 4.1 of this *PA and* EIS/EIR, list cumulative projects in the vicinity of the project site and surrounding area. Consideration of the projects listed in San Bernardino County, identified in Tables 4.1-1 and 4.1-2 and shown on Figures 4.1-1a and 4.1-1b were used to develop this analysis of cumulative effects for public health and safety.

Several types of development projects could contribute to the cumulative impact of the Proposed Action and alternatives, including housing development projects, commercial and industrial development, transportation projects, and renewable energy projects. These types of past and existing projects could combine with potential impacts of the Proposed Action or an alternative to affect public health and safety within the geographic extent of this cumulative analysis.

Existing projects in the Ivanpah Valley area that use hazardous materials and generate wastes include the Union Pacific Railroad, existing Calnev and Kern River Pipelines, Primm Valley Golf Club, Silver State Phase 1, and Molycorp Minerals. Projects currently under construction in the vicinity of the proposed facility include the Ivanpah SEGS solar facility (3,471 acres). Proposed projects in the vicinity of the proposed facility that would have potentially adverse impacts to public health and safety include the Southern Nevada Supplemental Airport, Desert Xpress high speed passenger rail line, Silver State Phase 2 solar facility, and the Calnev Pipeline Expansion Project. In addition, any projects being constructed within San Bernardino County, and that would use County waste disposal facilities, would have the potential to create cumulative impacts associated with waste disposal.

Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA or will do so prior to approval.

4.11.10.4 Cumulative Impacts Associated with Proposed Action

Construction

The proposed developments near the project site would have the potential to contribute to cumulative public health and safety impacts. It is expected that one or more of the cumulative projects described above may be under construction at the same time as the Proposed Action. In particular, construction of the Ivanpah SEGS facility, the Calnev Pipeline Expansion Project, and JPOE are expected to occur in 2013.

Seismic Hazards

The project site is considered to have low potential for seismic events, liquefaction, and landslide. To verify that seismic hazards would not affect the project, the Applicant would conduct preliminary site investigations as outlined in mitigation measure MM-PH&S-1. Structural failure at the project site is not likely and with the implementation of mitigation measure MM-PH&S-1, no adverse impacts would occur. As such, Proposed Action impacts are

not expected to combine with similar impacts of past, present, or reasonably foreseeable projects, and the proposed facility would not contribute to cumulative impacts.

Hazardous Materials and Waste Management

As a result of the concurrent construction and operating projects in the area, there would be multiple potential sources of hazardous materials and waste. Applicable regulations and implementation of mitigation measures MM-PH&S-2, MM-PH&S-3, MM-PH&S-4, and MM-PH&S-5 would ensure that impacts would not occur as a result of the Proposed Action. The other current and reasonably foreseeable future projects in the region would be subject to the same regulations, as well as similar mitigation measures required as a result of their own independent environmental reviews. Because the Proposed Action and other projects are separated by distances of a mile or more, a hazardous material release from one project would not have the potential to combine with contamination from spills from other projects to result in a cumulative impact.

Herbicides may be used for vegetation removal within the solar PV arrays during construction. Herbicides used for vegetation control within the arrays and other project facilities could result in adverse health effects to the public, maintenance personnel, wildlife, or sensitive vegetation if herbicides are handled improperly or chemical drift occurs away from the target area. To reduce potential impacts from herbicides, implementation of mitigation measure MM-PH&S-5 would be required. Because the Proposed Action and other projects are separated by distances of a mile or more, use of herbicides at one project would not have the potential to combine with impacts from other projects to result in a cumulative impact.

The potential exists for hazardous materials being used during construction of the project to be released into the desert washes and ephemeral streams that traverse the site; however, mitigation measure MM-PH&S-2 would require hazardous materials use and storage to occur at a distance from watercourses, which would reduce the potential for any spilled materials to enter watercourses. Because the Proposed Action and other projects are separated by distances of a mile or more, releases of hazardous material at one project would not have the potential to combine with impacts from other projects to result in a cumulative impact.

The potential also exists for motor vehicle fuel to be released from on-site storage tanks or for transformer oil to be released at the project substation. If a leak were to occur during construction, potentially resulting in a hazard to soil, water, wildlife, or personnel at the project site. Implementation of a SPCC Plan as required by mitigation measure MM-PH&S-2 would reduce potential impacts from the use of hazardous materials at the project site. Because the Proposed Action and other projects are separated by distances of a mile or more, a hazardous material release from one project would not have the potential to combine with contamination from spills from other projects to result in a cumulative impact.

The analysis of direct impacts as a result of the use of CdTe panels in Section 4.11.3.1 indicated that the potential for the release of cadmium as a result of fire or breakage was very unlikely, and even if such a release occurred, the mass of material that could be released would be minimal. Even though similar CdTe panels are also proposed for use at the Silver State project a few miles away, that project would have a similarly low potential for release. In both cases, it is highly unlikely that any released material could be released past the project boundaries in detectable quantities. Therefore, there is no potential for releases at both sites to have cumulative effects.

Emergency Response

Although the solar facility would contain relatively few flammable components, the presence of electrical generating equipment and electrical cables, along with various oils (lubricating, cooling, and hydraulic) creates the potential for fire or a medical emergency within the facility. The project site is located in a rural area with several alternative access roads allowing easy access to the site in the event of an emergency. However, perimeter fencing and security gates could physically interfere with emergency vehicle access or personnel evacuation from the project site. Heavy construction-related traffic could interfere with emergency response to the project site or emergency evacuation procedures in the event of an emergency such as a wildfire or a chemical spill at the project site. To ensure emergency access to the project site during construction, implementation of mitigation measure MM-PH&S-4 would require the Applicant to appoint an Emergency Response Liaison to coordinate the reduction of construction-related traffic for the duration of any emergency at or nearby the project site, and to *implement their* construction Traffic Control Plan that includes assurance of access for emergency vehicles to the project site.

This impact has the potential to combine with other current and future projects that would generate high volumes of traffic on area roadways and whose construction schedules overlap with that of the proposed facility by creating a cumulative traffic burden on regional roadways as a result of an abundance of construction vehicles. Given the rural nature of the project area and the fact that most cumulative projects in the project vicinity would not generate high volumes of traffic, the potential for a cumulative impact on emergency response is low. As such, proposed facility impacts are not expected to combine with similar impacts of past, present, or reasonably foreseeable projects, and the proposed facility would not contribute to cumulative impacts.

Worker Safety

Applicable regulations and implementation of mitigation measure MM-PH&S-2 would ensure that impacts associated with worker health and safety would not occur as a result of construction of the Proposed Action. The other current and reasonably foreseeable future projects in the region would be subject to the same regulations, as well as similar mitigation measures required as a result of their own independent environmental reviews. Because the Proposed Action and other projects are separated by distances of a mile or more, worker safety hazards on one site would not have the potential to combine with hazards from another site to result in a cumulative impact.

Intentionally Destructive Acts

Depending on the severity of the event, fixed components of a solar facility could be damaged or destroyed, resulting in economic, safety, and environmental consequences. Equipment used in constructing the solar facility could also be impacted, potentially resulting in loss of life. In general, the consequences of an intentionally destructive act, including sabotage or terrorist attack on a solar facility would be expected to be similar to those discussed under seismic hazards and hazardous materials regarding accidental and natural events. The potential consequences of such events would be site-specific and unlikely to occur. As such, proposed facility impacts are not expected to combine with similar impacts of past, present, or reasonably foreseeable projects, and the proposed facility would not contribute to cumulative impacts.

Operation and Maintenance

It is expected that all of the cumulative projects described above would be operational at the same time as the Proposed Action. As a result, the current and proposed developments near the project site would have the potential to contribute to cumulative public health and safety impacts*, as outlined below.*

Seismic Hazards

As discussed under ”Construction”, the project site is considered to have low potential for seismic and geologic hazards, including liquefaction and lateral spreading. In addition, potential operations and maintenance impacts would be site specific and would be reduced by the implementation of mitigation measure MM-PH&S-1. Therefore, proposed facility impacts are not expected to combine with similar impacts of past, present, or reasonably foreseeable projects, and operations of the proposed facility would not contribute to cumulative impacts.

Hazardous Materials and Waste Management

As discussed under “Construction”, operation of the proposed facility would result in a potential hazard to the public or personnel if a hazardous material spill or leak were to occur. Additionally, grading, drilling, or excavation at the project site has the potential to mobilize hazardous materials currently in the soil, which could result in exposure of personnel and other sensitive receptors such as plants and wildlife to contaminant levels that could result in short-term and/or long-term health effects. Implementation of the Applicant’s Emergency Response and Hazardous Materials Management Plan (First Solar 2012b) as required by mitigation measure MM-PH&S-2 would ensure that potential impacts are reduced. This impact does not have the potential to combine with contamination from spills from other projects to result in a cumulative impact due to the site-specific nature of soil contamination. Implementation of the Emergency Response and Hazardous Materials Management Plan would ensure proper cleanup and disposal of contaminated soil.

The potential exists for hazardous materials being used during operation and maintenance of the project to be released into the desert washes and ephemeral streams that traverse the site; however, mitigation measure MM-PH&S-2 would require hazardous materials use and storage to occur at a distance from watercourses, which would reduce the potential for any spilled materials to enter watercourses. Because the Proposed Action and other projects are separated by distances of a mile or more, releases of hazardous material at one project would not have the potential to combine with impacts from other projects to result in a cumulative impact.

The potential also exists for motor vehicle fuel to be released from on-site storage tanks or for transformer oil to be released at the project substation if a leak were to occur during operations, potentially resulting in a hazard to soil, water, wildlife, or personnel at the project site. Implementation of a SPCC Plan as required by mitigation measure MM-PH&S-2 would reduce potential impacts from the use of hazardous materials at the project site. Because the Proposed Action and other projects are separated by distances of a mile or more, a hazardous material release from one project would not have the potential to combine with contamination from spills from other projects to result in a cumulative impact.

Emergency Response

During project operation and maintenance, minimal traffic is expected to occur and is not likely to interfere with emergency response activities. Therefore, this impact would not combine with

similar impacts of past, present, or reasonably foreseeable projects, and proposed facility operations would not contribute to cumulative impacts.

Worker Safety

Applicable regulations and implementation of mitigation measure MM-PH&S-2 would ensure that impacts associated with worker health and safety would not occur as a result of operations and maintenance of the Proposed Action. The other current and reasonably foreseeable future projects in the region would be subject to the same regulations, as well as similar mitigation measures required as a result of their own independent environmental reviews. Because the Proposed Action and other projects are separated by distances of a mile or more, worker safety hazards on one site would not have the potential to combine with hazards from another site to result in a cumulative impact.

Intentionally Destructive Acts

Depending on the severity of the event, fixed components of a solar facility could be damaged or destroyed, resulting in economic, safety, and environmental consequences. Equipment used during operations and maintenance of the solar facility could also be impacted, potentially resulting in loss of life. In general, the consequences of an intentionally destructive act, including sabotage or terrorist attack on a solar facility would be expected to be similar to those discussed under seismic hazards and hazardous materials regarding accidental and natural events. The potential consequences of such events would be site-specific and unlikely to occur. As such, proposed facility impacts are not expected to combine with similar impacts of past, present, or reasonably foreseeable projects, and the proposed facility would not contribute to cumulative impacts.

Decommissioning

It is expected that all of the cumulative projects described above, as well as additional projects, would be in various stages of construction, operations, and decommissioning during the decommissioning of the Proposed Action. As a result, the current and proposed developments near the project site would have the potential to combine with the decommissioning of the Proposed Action and contribute to cumulative public health and safety impacts*, as outlined below.*

Seismic Hazards

As discussed under ”Construction”, the project site is considered to have low potential for seismic and geologic hazards, including liquefaction and lateral spreading. In addition, potential decommissioning impacts would be site specific and would be reduced by the implementation of mitigation measure MM-PH&S-1. Therefore, proposed facility impacts are not expected to combine with similar impacts of past, present, or reasonably foreseeable projects, and decommissioning of the proposed facility would not contribute to cumulative impacts.

Hazardous Materials and Waste Management

As discussed under “Construction”, decommissioning of the proposed facility would result in a potential hazard to the public or personnel if a hazardous material spill or leak were to occur. Implementation of the Applicant’s Emergency Response and Hazardous Materials Management Plan (First Solar 2012b) as required by mitigation measure MM-PH&S-2 would ensure that

potential impacts are reduced. This impact does not have the potential to combine with contamination from spills from other projects to result in a cumulative impact due to the site-specific nature of soil contamination. Implementation of the Emergency Response and Hazardous Materials Management Plan would ensure proper cleanup and disposal of contaminated soil.

The potential exists for hazardous materials being used during decommissioning of the project to be released into the desert washes and ephemeral streams that traverse the site; however, mitigation measure MM-PH&S-2 would require hazardous materials use and storage to occur at a distance from watercourses, which would reduce the potential for any spilled materials to enter watercourses. Because the Proposed Action and other projects are separated by distances of a mile or more, releases of hazardous material at one project would not have the potential to combine with impacts from other projects to result in a cumulative impact.

The potential also exists for motor vehicle fuel to be released from on-site storage tanks or for transformer oil to be released at the project substation if a leak were to occur during decommissioning, potentially resulting in a hazard to soil, water, wildlife, or personnel at the project site. Implementation of a SPCC Plan as required by mitigation measure MM-PH&S-2 would reduce potential impacts from the use of hazardous materials at the project site. Because the Proposed Action and other projects are separated by distances of a mile or more, a hazardous material release from one project would not have the potential to combine with contamination from spills from other projects to result in a cumulative impact.

Emergency Response

Heavy traffic associated with decommissioning could interfere with emergency response to the project site or emergency evacuation procedures in the event of an emergency such as a wildfire or a chemical spill at the project site. To ensure emergency access to the project site during decommissioning, implementation of mitigation measure MM-PH&S-4 would require the Applicant to appoint an Emergency Response Liaison to coordinate the reduction of decommissioning-related traffic for the duration of any emergency at or nearby the project site, and to *implement their* construction Traffic Control Plan that includes assurance of access for emergency vehicles to the project site.

This impact has the potential to combine with other current and future projects that would generate high volumes of traffic on area roadways and whose construction or decommissioning schedules overlap with that of the proposed facility by creating a cumulative traffic burden on regional roadways as a result of an abundance of heavy equipment and worker vehicles. Given the rural nature of the project area and the fact that most cumulative projects in the project vicinity would not generate high volumes of traffic, the potential for a cumulative impact on emergency response is low. As such, proposed facility impacts are not expected to combine with similar impacts of past, present, or reasonably foreseeable projects, and the proposed facility would not contribute to cumulative impacts.

Worker Safety

Applicable regulations and implementation of mitigation measure MM-PH&S-2 would ensure that impacts associated with worker health and safety would not occur as a result of decommissioning of the Proposed Action. The other current and reasonably foreseeable future projects in the region would be subject to the same regulations, as well as similar mitigation measures required as a result of their own independent environmental reviews. Because the Proposed Action and other projects are separated by distances of a mile or more, worker safety

hazards on one site would not have the potential to combine with hazards from another site to result in a cumulative impact.

Intentionally Destructive Acts

Depending on the severity of the event, fixed components of a solar facility could be damaged or destroyed, resulting in economic, safety, and environmental consequences. Equipment used during decommissioning of the solar facility could also be impacted, potentially resulting in loss of life. In general, the consequences of an intentionally destructive act, including sabotage or terrorist attack on a solar facility would be expected to be similar to those discussed under seismic hazards and hazardous materials regarding accidental and natural events. The potential consequences of such events would be site-specific and unlikely to occur. As such, proposed facility impacts are not expected to combine with similar impacts of past, present, or reasonably foreseeable projects, and the proposed facility would not contribute to cumulative impacts.

Modify Boundary of Ivanpah DWMA

Modification of the Ivanpah DWMA boundary would not result in the use of hazardous materials or generation of wastes. Therefore, this action would not contribute to cumulative impacts to public health and safety.

4.11.10.5 CEQA Significance Determinations

Impacts of the Proposed Action related to seismic hazards, hazardous materials, worker safety, and intentionally destructive acts are localized in nature and site specific. Potential impacts are not expected to combine with similar impacts of past, present, or reasonably foreseeable projects. Therefore, significance determinations are not provided below for CEQA Significance Criteria PH&S-1, PH&S-2, PH&S-3, PH&S-4 or PH&S-5.

PH&S-6

Construction and decommissioning of the Stateline Solar Farm Project has the potential for impairing implementation of San Bernardino County adopted emergency evacuation and emergency response plans. During construction and decommissioning, activities could affect traffic and emergency routes, including equipment and material delivery. Project traffic during construction and decommissioning could interfere with emergency response to the project site or emergency evacuation procedures in the event of an emergency such as a wildfire or a chemical spill at the project site. Perimeter fencing and security gates could physically interfere with emergency vehicle access or personnel evacuation from the project site.

This impact has the potential to combine with other current and future projects that would generate high volumes of traffic on area roadways and whose construction schedules overlap with that of the proposed facility. Although the potential for a cumulative impact to emergency response is unlikely to occur due to the rural nature of the project area and the fact that most cumulative projects in the project vicinity would not generate high volumes of traffic, with the implementation of mitigation measure MM-PH&S-4 and a Traffic Management Plan, the project's contribution to cumulative impacts would be less than significant.

PH&S-7

Construction, operation, and decommissioning of the Stateline Solar Farm Project would not generate solid waste in a volume that exceeds the capacity of existing facilities. The California Solid Waste Reuse and Recycling Access Act of 1991, as amended, requires expanded or new development projects to incorporate storage areas for recycling bins into the project design. The Applicant would implement a recycling program that would be included in the Waste Management Plan. The Applicant would contract with a recycler or waste hauler to transport waste to a regional offsite recycling facility. Reuse and recycling of construction debris would reduce operating expenses and save valuable landfill space. Implementation of the Applicant's pre-funded PV Module Recycling Program would ensure that most project components are eventually recycled, and not disposed in solid waste landfills. Potential impacts would be less than significant with mitigation.

4.11.10.6 Alternatives

Alternative 2: 2,385 Ac Alternative

The public health and safety impacts associated with Alternative 2 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with Alternative 2 would be the same as those described above for the Proposed Action.

***Revised* Alternative 3: *1,685* Ac Alternative**

The public health and safety impacts associated with *Revised* Alternative 3 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with *Revised* Alternative 3 would be the same as those described above for the Proposed Action.

Alternative 4: Reduced Acreage Alternative

The public health and safety impacts associated with Alternative 4 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with Alternative 4 would be the same as those described above for the Proposed Action.

Alternative 5: No Action Alternative

Alternative 5, the No Action Alternative, would not contribute to public health and safety impacts. Therefore, this alternative would not contribute to cumulative public health and safety impacts.

Alternative 6: No Project, Exclude Solar Alternative

By denying the solar energy application and excluding the site from future solar energy development, Alternative 6 would not contribute to cumulative public health and safety impacts.

Alternative 7: No Project, Approve Solar Alternative

By denying the solar energy application, Alternative 7 would not contribute to cumulative health and safety impacts. The site could potentially be used for solar or other development in the future. Public health and safety impacts associated with future actions would be considered in a later project-specific environmental analysis.

4.11.11 Mitigation Measures

Project-specific mitigation measures have been developed to reduce and/or avoid potential public health and safety impacts associated with construction, operation and maintenance, and decommissioning of the proposed facility. These project-specific mitigation measures are presented below:

MM-PH&S-1: *Prior to beginning construction, the Applicant shall complete their proposed* geotechnical study to evaluate soil conditions and geologic hazards on the project site and submit it for approval to the BLM. The geotechnical study must be signed by a California-registered professional engineer and must identify the following:

- Presence, if any, of potentially detrimental soil chemicals, such as chlorides and sulfates;
- Appropriate design measures for protection of reinforcement, concrete, and metal-structural components against corrosion (such as use of corrosion-resistant materials and coatings, increased thickness of project components exposed to potentially corrosive conditions, and use of passive and/or active cathodic protection systems);
- Location of fault traces and potential for surface rupture;
- Potential for seismically induced ground shaking, liquefaction, landslides, differential settlement, and mudflows;
- Stability of existing cut-and-fill slopes;
- Collapsible or expansive soils;
- Foundation material type;
- Potential for wind erosion, water erosion, sedimentation, and flooding;
- Location and description of unprotected drainages that could be impacted by the proposed development; and
- Recommendations for placement and design of facilities, foundations, and remediation of unstable ground.

Studies shall conform to industry standards of care and American Society for Testing and Materials (ASTM) standards for field and laboratory testing. Study results and proposed solutions shall be provided for review and approval to the BLM at least 60 days before final project design.

The Applicant shall determine the final siting of project facilities based on the results of the geotechnical study and implement recommended measures to minimize geologic hazards. The Applicant shall not locate project facilities on or immediately adjacent to a fault trace. The BLM will evaluate any final facility siting design developed prior to the issuance of the ROW grant to verify that geological constraints have been avoided.

MM-PH&S-2: The Applicant shall implement their Emergency Response and Hazardous Materials Management Plan (First Solar 2012b) and submit a SPCC Plan to the BLM for approval. After receiving comments, the Applicant shall reflect all received recommendations in the final documents. Copies of the final Emergency Response and Hazardous Materials Management Plan and SPCC Plan shall be provided to the BLM and the Hazardous Materials Division of the County of San Bernardino Fire Department. The Emergency Response and Hazardous Materials Management Plan shall include the following:

- "Good housekeeping" procedures shall be developed to ensure that during operation the site will be kept clean of debris, garbage, fugitive trash or waste, and graffiti; to prohibit scrap heaps and dumps; and to minimize storage yards.
- The plan shall identify all hazardous materials that would be used, stored, or transported at the site. It shall establish inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials. The plan shall also identify requirements for notices to federal and local emergency response authorities and include emergency response plans.
- The Applicant shall develop a spill prevention and response plan identifying where hazardous materials and wastes are stored on-site, spill prevention measures to be implemented, training requirements, appropriate spill response actions for each material or waste, the locations of spill response kits on-site, a procedure for ensuring that the spill response kits are adequately stocked at all times, and procedures for making timely notifications to authorities.
- Secondary containment shall be provided for all on-site hazardous materials and waste storage, including fuel. In particular, fuel storage (for construction vehicles and equipment) shall be a temporary activity occurring only for as long as is needed to support construction activities.
- In the event of an accidental release to the environment, the Applicant shall document the event, including a root cause analysis, appropriate corrective actions taken, and a characterization of the resulting environmental or health and safety impacts. Documentation of the event shall be provided to the BLM and other federal and state agencies, as required.

The Applicant shall not use any hazardous materials not listed in Tables 4.11-1 and 4.11-2, or in greater quantities than those identified by chemical name in Tables 4.11-1 and 4.11-2, unless approved in advance by the BLM. The proposed soil stabilizer identified as "EccoTex" shall not be used unless a MSDS identifying its chemical content is provided, and its use is approved by BLM.

The Applicant shall site all fueling, hazardous materials storage areas, and operation and maintenance activities involving hazardous materials at least 100 feet away from blue-line drainages as identified on USGS topography maps and wetlands.

The waste management components of the Emergency Response and Hazardous Materials Management Plan (First Solar 2012b) shall be implemented. These components shall contain, at a minimum, the following:

- A description of all construction, operations and maintenance, and decommissioning waste streams, including projections of frequency, amounts generated, and hazard classifications;
- Management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, containerization methods, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of

transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans;

- Information and summary records of conversations with the local Certified Unified Program Agency and the Department of Toxic Substances Control regarding any waste management requirements necessary for project activities. Copies of all required waste management permits, notices, and/or authorizations shall be included in the plan and updated as necessary;
- A detailed description of how facility wastes will be managed and any contingency plans to be employed, in the event of an unplanned closure or planned temporary facility closure; and
- A detailed description of how facility wastes will be managed and disposed upon closure of the facility.

Any wastewater generated in association with temporary, portable sanitary facilities shall be periodically removed by a licensed hauler and either disposed in the on-site septic and leach field, or introduced into an existing municipal sewage treatment facility. Temporary, portable sanitary facilities provided for construction crews shall be adequate to support expected on-site personnel and shall be removed at completion of construction activities.

Upon becoming aware of any impending waste management-related enforcement action by any local, state, or federal authority, the Applicant shall notify BLM of any such action taken or proposed to be taken against the project itself, or against any waste hauler or disposal facility or treatment operator with which the Applicant contracts.

The health and safety components of the Emergency Response and Hazardous Materials Management Plan (First Solar 2012b) shall be implemented. These components shall contain, at a minimum, the following:

- Personal Protective Equipment;
- Exposure Monitoring;
- Injury and Illness Prevention;
- Emergency Action; and
- Fire Prevention.

The health and safety program shall be developed to protect both workers and the general public during construction, operation, and decommissioning of the project. Regarding occupational health and safety, the program shall identify all applicable federal and state occupational safety standards; establish safe work practices for each task (e.g., requirements for personal protective equipment and safety harnesses; OSHA standard practices for safe use of explosives and blasting agents; and measures for reducing occupational electric and magnetic fields exposures); establish fire safety evacuation procedures; and define safety performance standards (e.g., electrical system standards and lightning protection standards). The program shall include a training program to identify hazard training requirements for workers for each task and establish procedures for providing required training to all workers. Documentation of training and a mechanism for reporting serious accidents to appropriate agencies shall be established.

MM-PH&S-3: The Applicant shall provide the resume of an experienced and qualified professional engineer or professional geologist, who shall be available for consultation during site characterization (if needed), demolition, excavation, and grading activities, to BLM and the County. The resume shall show experience in remedial investigation and feasibility studies.

The professional engineer or professional geologist shall be given authority by the project owner to oversee any earth moving activities that have the potential to disturb contaminated soil and impact public health, safety and the environment.

If potentially contaminated soil is identified during site characterization, demolition, excavation, or grading at either the proposed site or linear facilities, as evidenced by discoloration, odor, detection by handheld instruments, or other signs, the professional engineer or professional geologist shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and provide a written report to the project owner, representatives of Department of Toxic Substances Control or Regional Water Quality Control Board, and the BLM stating the recommended course of action.

Depending on the nature and extent of contamination, the professional engineer or professional geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If, in the opinion of the professional engineer or professional geologist, significant remediation may be required, the project owner shall contact the BLM and representatives of the Department of Toxic Substances Control for or the Regional Water Quality Control Board, for guidance and possible oversight.

MM-PH&S-4: The Applicant shall implement their Traffic Control Plan (First Solar 2012e) for the site access roads to ensure that no hazards would result from the increased truck traffic and that traffic flow would not be adversely impacted. This plan shall incorporate measures such as informational signs, flaggers when equipment may result in blocked throughways, and traffic cones to identify any necessary changes in temporary lane configuration. The Applicant shall consult with local planning authorities regarding increased traffic during the construction phase, including an assessment of the number of vehicles per day, their size, and type. Specific issues of concern (e.g., location of school bus routes and stops) shall be identified and addressed in the Traffic Control Plan. The Plan would include designation of an Emergency Response Liaison to coordinate the reduction of traffic for the duration of any emergency.

MM-PH&S-5: The Applicant shall implement their *Integrated* Weed Management Plan (First Solar *2013c*) which identifies BMPs that would be implemented for the storage and application of herbicides used to control weeds beneath and around the solar array. The plan shall be developed to ensure that applications would be conducted within the framework of BLM and DOI policies and entail only the use of EPA-registered pesticides. Pesticide use shall be limited to non-persistent, immobile pesticides and shall only be applied in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications.

MM-PH&S-6: A bond to provide performance and financial assurance guarantees to ensure completion of the requirements of the approved Closure, Decommissioning, and Reclamation Plan, acceptable to BLM's Authorized Officer, shall be furnished by the Applicant prior to the issuance of a Notice to Proceed with construction or at such earlier date as may be specified by BLM's Authorized Officer. The amount of this bond shall be determined by BLM's Authorized Officer. This bond must be maintained in effect until removal of improvements and restoration of the right-of-way have been accepted by BLM's Authorized Officer. At least 30 days prior to the start of construction and prior to any Notice to Proceed with construction issued by BLM's Authorized Officer, the project owner shall provide BLM's Authorized Officer with documentation of the following:

A. BLM's ROW Grant and final approved Plan of Development;

B. The bond satisfactory to BLM's Authorized Officer;

C. Certification that the project owner acknowledges that the *Desert Stateline, LLC* development and all related construction, operation, maintenance and closure activities are to be conducted in conformance with the approved Plan of Development and within the approved ROW boundaries for the life of the project.

4.11.12 Residual Impacts After Mitigation

Although unlikely, following implementation of mitigation measures provided in Section 4.11.11, it is possible that an accidental hazardous material release could occur and could cause a public health and safety risk to the human environment. No other residual impacts to public health and safety are expected to occur as a result of construction, operation and maintenance, and/or decommissioning of the proposed Project or an alternative.

4.12 Recreation

4.12.1 Methodology for Analysis

The following discussion identifies and analyzes the impacts of the Proposed Action and alternatives on recreational resources. Existing and planned recreational resources were identified through a variety of sources. Recently published maps and internet sources were used to verify the location of recreational areas and resources. Federal, State, and local (County) plans, such as land management plans and general plans, were consulted to describe the project regions with regards to recreation. Internet searches of agency (Federal, State, and local) websites were conducted to verify the location and specifics of both existing and planned recreational facilities.

4.12.2 CEQA Significance Criteria

The indicators listed below were used to determine if the proposed Stateline Solar Farm facility would result in significant impacts to recreational resources under CEQA. These indicators are *based on* the significance criteria for recreation listed in the CEQA Environmental Checklist, Appendix G of the CEQA Guidelines:

- Rec-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that the physical deterioration of the facility would occur or be accelerated; or
- Rec-2: Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

For the proposed Stateline Solar Farm ROW grant, the Rec-2 criterion was determined to result in no impacts under all alternatives since the development of recreational facilities is not included in the as part of that component of the Proposed Action. As discussed in Section 4.13 (Social and Economic Issues), construction of the proposed facility would require a peak of approximately 600 workers. It is anticipated that the majority of construction personnel would stay in hotels and rental properties in Primm or commute from Las Vegas for the duration of construction. Operation and maintenance of the proposed facility would require a workforce of approximately 10 staff year-round. It is anticipated that few, if any, workers would relocate to the area permanently. Consequently, construction, operation, and maintenance of the solar facility would not substantially increase the population and the project would not require the construction of recreational facilities. Appendix G of the CEQA Guidelines also includes a criterion under Public Services for potential adverse physical impacts associated with the provision of new or physically altered government facilities, the construction of which could cause environmental impacts, including parks. For the reasons stated under the Rec-2 criterion, the issuance of the solar ROW grant as a component of the Proposed Action would not result in the construction of new parks and would not result in the physical alteration of parks.

Because there would be no impact to recreational facilities and parks associated with the solar project, and the CEQA criteria are not applicable to BLM's management actions, the Rec-2 and Public Services criteria are not discussed further in this section.

4.12.3 Alternative 1: Proposed Action

4.12.3.1 Direct and Indirect Impacts

Impacts to recreational resources associated with the Proposed Action could result from physical removal of the project area from other uses, disruption of hydrology or wind characteristics, visual impacts associated with the facility, and impacts associated with facility

employment. Of these, all potential impacts other than those associated with employment, would result from the removal of the Project Site from recreational use and existence of infrastructure on the project site. These impacts would begin during construction, and remain throughout operations until the infrastructure is removed during decommissioning. Therefore, these potential impacts are discussed outside of the framework of construction, operations, and decommissioning. Potential impacts associated with facility employment are discussed within the framework of construction, operations, and decommissioning.

Recreational Resources within Proposed Solar Farm Boundaries

Approval of the proposed solar farm would directly remove approximately 2,143 acres associated with Stateline Solar Farm *long-term* disturbance from potential use for recreational opportunities such as camping, hiking, hunting, and wildlife viewing. This comprises approximately 3 percent of the land area available for recreation within the Ivanpah Valley, but is a small fraction of the overall land area available in the eastern Mojave Desert.

The proposed facility would not have a direct impact on recreational resources within the proposed right-of-way grant boundaries, because it is unlikely that the proposed solar farm area is substantially used for recreation except for providing traffic access to other locations. Any impacts on traffic access to these other areas would be mitigated by the re-routing of roads currently within the Project's proposed footprint around the facility. The re-direction of roads around the perimeter of the facility is addressed in the Applicant's Plan of Development. The perimeter routes would be constructed by the Applicant, and would be designated by BLM as open routes. The routes would not be included as a part of the Applicant's ROW grant.

The proposed facility area includes three routes of travel designated by BLM as open routes. These routes include route 699226 (1.8 miles encompassed by the Proposed Action), 699198 (2.0 miles), and 699238 (1.4 miles). A total of 5.2 miles of existing open routes would be impacted under the Proposed Action. The closed portions of the three routes would be removed from the list of open routes on BLM's OHV designation. The Applicant would construct replacement routes around the perimeter of their facility, and these would be designated by BLM as open routes. The replacement routes would not be part of the ROW grant for the project, and would not be the responsibility of the Applicant to maintain. The redirected routes would be designed and constructed to minimize damage to soil, watershed, vegetation, and air resources*, in accordance with BLM's designation criteria in 43 CFR 8342.1*. Recreational use of the redirected trails would not conflict with facility operations, except on the rare occasion that repair equipment is mobilized by the Applicant to repair damage to security or desert tortoise fencing around the solar project. Fence maintenance could temporarily block the route to other users; however, this impact would only occur on an occasional basis and would be a minor inconvenience.

Although the direct impacts to recreational users are expected to be minor, the development of the power generation plant would change the experience from that of a primitive driving experience to the experience of driving around a commercially developed urban area.

The Proposed Action is not expected to have adverse impacts on recreational resources within the proposed boundaries. This is because there are no substantial uses of the project area for recreation, and the rerouting of the affected routes of travel around the proposed solar farm boundaries is expected to cause only a minor inconvenience.

Regional Recreational Resources

The geographic scope of the impact would not be limited to the proposed land area of the project, but could potentially include the entire Ivanpah Valley from which the project site is visible. Recreational visitors in Ivanpah Valley are attracted to the combination of desert

scenery, close proximity to a major population center (Las Vegas), proximity to tourist destinations (Primm casinos and Primm Valley Golf Course), proximity to organized recreational events (the Los Angeles, Barstow-to-Vegas Dual Sport Event and land sailing events), proximity to the Mojave National Preserve and designated wilderness (Clark Mountain, Stateline, and Mesquite), and easy access by I-15. The closest recreational facility would be the Primm Valley Golf Course, which is located approximately 0.5 miles to the south of the proposed facility.

The proposed facility would have an indirect impact on recreational users in the region due to its diminishing of the quality of the outdoor setting. The project would contribute, along with other projects, to transforming the Ivanpah Valley area from a mostly natural setting to a more developed setting. The sight of a large-scale solar power facility may attract some recreational users, so the impact would be beneficial to some users. However, recreationists interested in the outdoor experience of camping, hunting, and hiking would likely consider the proposed facility to be detrimental to their experience.

Recreationists to the region primarily come to experience one of the outstanding recreational experiences in the Ivanpah region such as land sailing at Ivanpah Dry Lake, hiking and camping in nearby BLM wilderness, or rock climbing on Clark Mountain. The project would have adverse impacts to recreational resources outside of the project boundaries as a result of diminishing the quality of the outdoor setting starting during construction, and continuing throughout operations and decommissioning. These adverse impacts are not considered intense enough to cause visitation to decrease because the recreationists are generally focused on a particular recreational experience, e.g. land sailing on Ivanpah Dry Lake, rock climbing on Clark Mountain, or hiking and camping in BLM wilderness. These experiences will continue to be provided.

Potential Impacts to Ivanpah Dry Lake

Recreational land sailing occurs on Ivanpah Dry Lake. This lakebed is a regionally and globally important land sailing site where world speed records are established. The world record was most recently established on the Ivanpah Dry Lake in March, 2009, at 126.2 miles per hour (mph). The proposed facility could have a direct impact on recreational use of Ivanpah Dry Lake for land sailing events if the construction or operation of the facility had any of the following effects:

- Modification of water flow and sedimentation rates onto the Dry Lake surface;
- Introduction of foreign materials (garbage, debris, or hazardous materials) to the Dry Lake surface;
- Modification of wind characteristics; or
- If the visual character of the facility were to present a distraction that could cause either a nuisance or a safety hazard to wind sailors.

Modified Sedimentation Characteristics

The Dry Lake surface is unique in not only being very flat, but also in having a hard surface that can support wheeled vehicles. The proposed facility is located on the active alluvial fan between the mountains to the west which are a source of stormwater runoff and sediment, and the Dry Lake surface to the east which is the ultimate depositional destination of the stormwater flow and sediment. Construction of the 2,143-acre facility would potentially modify the existing hydrologic flow conditions that provide both water flow and sediment to the Dry Lake surface. Hydrologic flow modification could cause changes in the Dry Lake surface by a variety of methods, including promoting erosion of the surface, increasing or decreasing current sedimentation rates to the surface, or providing sediment of a different grain size and

composition. To address this possibility, as well as to protect biological resources downstream of the facility, BLM has evaluated the effect of the proposed facility development on stormwater runoff and sedimentation in Section 4.19. The analysis presented in that section concludes that the proposed facility would not modify stormwater flow or sedimentation characteristics downstream of the proposed facility. However, that section also noted that this conclusion is based on computer modeling assumptions that are approximate, and that there is little operational experience with developments of this magnitude in the Mojave Desert. To address this uncertainty, mitigation measure MM-Water-9 would specify stormwater monitoring and response measures to evaluate the effect of the proposed facility on downstream runoff and sedimentation characteristics.

Introduction of Foreign Materials

In addition to modified stormwater and sediment, the proposed facility could affect the Dry Lake surface if garbage, hazardous materials, or debris were to be released from the project area and move downstream during storm events. Management of garbage and hazardous materials on the proposed solar farm property is addressed in Sections 4.11. That section concluded that the proposed management and disposal procedures for these materials would be adequate to protect against their release. The potential for debris is related to the potential for stormwater events to cause flood damage to project structures including PV modules, wiring, fencing, buildings, and stormwater management structures. The potential for these items to be damaged and transported during storm events was also evaluated in Section 4.19. Similar to the analysis of sedimentation, that analysis concluded that the proposed stormwater management system, including the implementation of debris basins at the downgradient end of the facility, would be adequate to avoid downstream transport of debris. In addition, mitigation measure MM-Water-9 would require the applicant to monitor the potential for stormwater damage to site structures, and would require a response should debris be transported downstream.

Modification of Wind Characteristics

Land sailing occurs throughout the year, with major racing events occurring in late March and other racing events occurring around Thanksgiving and at other times during the year (Hatch 2009). Most of the dry lake bed, on both sides of the I-15, is used for land sailing. In general, the most desirable wind speeds for land sailing are between 12 mph up to 30 mph; however, land sailing can occur during wind speeds down to 6 mph, and world record runs will occur at higher wind speeds over 30 mph gusting to 40 mph. Land sailing does not occur when the lake bed is wet, when wind speeds are too low, and when wind speeds are too high.

The Proposed Action would be comprised of low-lying PV modules that are no more than six feet above ground surface in height. The facility would also include 12 PV combining switchgear (PVCS) units that are approximately 8 feet in height, a substation, transmission lines, and an O&M Building. The specific components of the project that could impact local wind patterns are as follows:

- The PV modules would to some degree block wind flow through the site at low heights.
- The larger central area buildings would cause localized wind turbulence.
- The project would cause a reduction in the natural heating of the soils and reduce temperature convection from the soils to the atmosphere (thermals).
- There would be an increase in localized thermal effects at the PV modules.

In general, any new structural components would increase drag and turbulence in the area and take some energy out of the winds, reducing their average velocity. The extent of this energy

loss is unknown; however, most of the turbulence, or downwash, from the buildings and PV modules should dissipate within the distance from the site to the lake bed.

The potential for the project to impact wind patterns at Ivanpah Dry Lake are expected to be limited to when winds cross the project site towards the lake bed (when the project is upwind of the lake bed). The proposed facility location is located within 750 feet of the lake bed, and the project site is very large so it can be upwind of some portion of the active land sailing area of the lake bed, using the extreme corners of the site border and lake bed border, when winds have almost any westerly component to them. Maximum effects from the facility would occur when winds approach the facility from the northwest. There is no available wind rose data for the local area. However, wind data for Las Vegas indicates that predominant wind directions are from the west from October to March, southwest in April and May, and south from June through September. The proposed facility could potentially affect wind conditions on the Dry Lake Bed during the period from October through May, when the wind is predominantly from the west and southwest. However, during these periods, the facility would only have the potential to affect wind conditions in the portion of the Dry Lake Bed located to the northwest of I-15. While individual land sailing does occur in that portion of the Dry Lake Bed, the large-scale organized events occur in the portion of the Dry Lake Bed to the southeast of I-15, where there is a larger amount of free space. The proposed facility could only affect wind conditions in that location if winds were from the northwest, which is never a predominant wind direction in the area.

Overall, the project's effect on ground level winds would be to cause a slight overall average decrease in ground level wind speeds and a slight increase in ground level wind turbulence. However, given that the facility would be situated in a location that is never predominantly upwind from the Dry Lake, and that thermal effects would not be expected, the facility would not cause an adverse impact to land sailing on Ivanpah Dry Lake.

Visibility and Glare Impacts to Land Sailing

The proposed facility would be visible to land sailors from the Dry Lake surface. Because of the unique nature of the wind resource on this Dry Lake Bed, it is unlikely that the visible presence of a nearby facility would create a nuisance such that wind sailors would stop using this location for their activity.

In addition to this nuisance effect, the safety of land sailors could potentially be impacted if glare from the PV modules were to be reflected towards the Dry Lake Bed. The PV modules proposed for the facility are black in color, and absorb more than 90 percent of the light received (First Solar 2011). As such, they do not present the potential for glare from reflected sunlight.

Construction

The project would result in a temporary increase in population due to the influx of construction workers. As proposed, the project would require a peak construction workforce of up to approximately 600 workers (First Solar 2011). Construction workers are expected to travel to the site from various locations throughout southern California and the Las Vegas area. The number of construction workers expected to relocate to the surrounding area is not expected to be substantial; however, any workers that relocate to these areas may use the regional recreation areas in the vicinity of the project site. The Stateline, Mesquite, and Clark Mountain Wilderness Areas; the Mojave National Preserve; and the Ivanpah Dry Lake Bed are in the immediate vicinity of the project site, which consist of thousands of acres of land available for the same recreation activities as the project site, including camping, hunting, and hiking. OHV use is not allowed at every recreation site; however, it is allowed in the Jean Lake/Roach Lake Special Management Area located in Nevada, within five miles of the proposed facility. Given that there are several large recreation areas in the project vicinity, the limited addition of people

to the area, and the short-term duration of construction, the potential temporary increase in use by project personnel at any one recreation area is not anticipated to be at such a level that would lead to the increased physical deterioration of the recreation resources.

Operation and Maintenance

Operation of the project would require a *long-term* staff of up to 10 individuals. It is expected that some of these individuals may already reside in the area and operation of the project would not result in a substantial influx of people to the area. Therefore, given that there exists a wide variety of recreational opportunities in the project vicinity, and the limited addition of project-related operations and maintenance employees to the area, there would not be a detectable increase in use at any one recreational facility or area resulting in the physical deterioration of existing recreational resources. However, the Proposed Action would alter the existing character of the proposed facility site and, therefore, may affect on-site and surrounding recreational uses of the site as a result of the altered viewshed.

Decommissioning

The decommissioning of the project would be similar to the construction activities described earlier, and would include demolition and removal of above-ground and subsurface facilities and site contouring and restoration. However, the duration of decommissioning would be shorter than the duration of construction. These activities would cause temporary, indirect disturbance to users of the recreation areas similar to those described under “Construction” above. However, after the Proposed Action has been decommissioned, users would experience a beneficial impact, as the site would return to its undeveloped state. Roads that would be used by the public would not be reclaimed and would remain open to vehicular use. While reclamation would result in removing the attraction for those users who enjoyed the sight of the facility, it would restore the desert experience for those users who prefer to visit a more natural setting. Once the reclamation effort is complete, the lands would become available for the same types of dispersed recreational use as were available prior to construction. The viewscape would return to a more natural setting, although recovery of the site with native vegetation would likely take many years.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the existing Ivanpah DWMA would not have an adverse impact on recreation resources in the area. The DWMA and surrounding area would remain available for their current recreational activities including land sailing, hiking, camping, and other activities. In addition, the expansion of the boundaries of the DWMA to encompass an additional *23,363* acres would remove that area from future development for renewable energy and other uses, ensuring that it would remain available for its current recreational uses. Recreational activities within the additional DWMA acreage would be subject to restrictions, as discussed in the NEMO plan amendments (BLM 2002). This would include restricting stopping, parking, and camping to disturbed areas within 100 feet of the centerline of open routes. Overall, the modification of the DWMA boundary would constitute a beneficial impact to recreational resources.

4.12.3.2 CEQA Significance Determinations

Rec-1

Construction

The temporary disruption to the project site as a result of construction could increase the use of regional recreation facilities such that the physical deterioration of the facilities may occur. However, the physical deterioration of recreational resources would be less than significant given the limited addition of people to the area, the short-term duration of construction, and the numerous recreation opportunities in the project vicinity.

Operation and Maintenance

During the operation period of the proposed facility, the project site would not be available for recreational uses. However, given the large scale of recreational resources available in the region, impacts would be less than significant. In addition, operation of the project would require a *long-term* staff of up to 10 individuals. This minimal increase in potential long-term recreation users would not substantially contribute to the physical deterioration of regional recreational opportunities. Therefore, this impact would be less than significant.

Decommissioning

The temporary disruption to the project site as a result of decommissioning activities could increase the use of regional recreation facilities such that the physical deterioration of the facilities may occur. However, the physical deterioration of recreational resources would be less than significant given the limited addition of people to the area, the short-term duration of decommissioning activities, and the numerous recreation opportunities in the project vicinity.

4.12.4 Alternative 2: 2,385 Ac Alternative

4.12.4.1 Direct and Indirect Impacts

Alternative 2 is conceptually similar to the Proposed Action (Alternative 1), but would cover a slightly different land area comprising 2,385 acres in a bifurcated footprint, resulting in the facility being situated differently with respect to local recreational resources. The proximity of the facility to the Dry Lake Bed is closer under Alternative 2 than the Proposed Action. The facility would be directly adjacent under Alternative 2 and approximately 750 feet away under the Proposed Action. Being closer, it is possible that impacts to recreational users of the Dry Lake Bed, including potential modification of wind patterns, could be greater under Alternative 2 than the Proposed Action.

The onsite recreational uses that would be eliminated by the fencing and removal of the facility under Alternative 2 would be the same as those eliminated under Alternative 1, but in a different area. Like the Proposed Action, routes that are currently designated as open would be closed, and re-routed around the facility. The Alternative 2 project area includes two routes of travel designated by BLM as open routes. These routes include route 699198 (1.6 miles encompassed by the Alternative 2 project area) 699238 (1.3 miles). A total of 2.9 miles of existing open routes would be impacted under Alternative 2. The distance between the Stateline Wilderness Area would be greater under Alternative 2 (approximately 6,500 feet) than under the Proposed Action (approximately 3,500 feet), resulting in a reduced impact on persons camping or hiking in the Wilderness Area.

The primary difference between Alternatives 1 and 2, with respect to recreational resources is that Alternative 2 would include project facilities on both the north and south sides of the Primm

Valley Golf Course, instead of only on the north side in the Proposed Action. The portion of the proposed solar facility to the south of the golf course would directly about the course, and would also be located adjacent to the primary entrance road to the golf course. As a result, Alternative 2 could have a more direct and adverse impact on the recreational experience for golfers using the course.

Construction

Employment associated with construction of Alternative 2 would be the same as under the Proposed Action. Therefore, potential impacts to recreational resources would be the same as described under "Construction" for Alternative 1.

Operation and Maintenance

Employment associated with operations of Alternative 2 would be the same as under the Proposed Action. Therefore, potential impacts to recreational resources would be the same as described under "Operation and Maintenance" for Alternative 1.

Decommissioning

Employment associated with decommissioning of Alternative 2 would be the same as under the Proposed Action. Therefore, potential impacts to recreational resources would be the same as described under "Decommissioning" for Alternative 1.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be approximately the same under Alternative 2 as Alternative 1. Modification of the boundary of the existing Ivanpah DWMA would not have an adverse impact on recreation resources in the area. The DWMA and surrounding area would remain available for their current recreational activities including land sailing, hiking, camping, and other activities. In addition, the expansion of the boundaries of the DWMA to encompass an additional *23,121* acres under Alternative 2 would remove that area from future development for renewable energy and other uses, ensuring that it would remain available for its current recreational uses. Recreational activities within the additional DWMA acreage would be subject to restrictions, as discussed in the NEMO plan amendments (BLM 2002). This would include restricting stopping, parking, and camping to disturbed areas within 100 feet of the centerline of open routes. Overall, the modification of the DWMA boundary would constitute a beneficial impact to recreational resources.

4.12.4.2 CEQA Significance Determinations

The CEQA significance determinations of recreation impacts for Alternative 2 would be identical to Alternative 1.

4.12.5 *Revised* Alternative 3: *1,685* Ac Alternative

4.12.5.1 Direct and Indirect Impacts

Revised Alternative 3 is conceptually similar to the Proposed Action (Alternative 1), but would cover a slightly different land area comprising *1,685* acres, resulting in the facility being situated differently with respect to local recreational resources. The proximity of the facility to the Dry

Lake Bed is closer under *Revised* Alternative 3 than the Proposed Action. The facility would be directly adjacent under *Revised* Alternative 3 and approximately 750 feet away under the Proposed Action. Being closer, it is possible that impacts to recreational users of the Dry Lake Bed, including potential modification of wind patterns, could be greater under *Revised* Alternative 3 than the Proposed Action.

The onsite recreational uses that would be eliminated by the fencing and removal of the facility under *Revised* Alternative 3 would be the same as those eliminated under Alternative 1, but in a different area. Like the Proposed Action, routes that are currently designated as open would be closed, and re-routed around the facility. The *Revised* Alternative 3 project area includes 3 routes of travel designated by BLM as open routes. These routes include route 699226 (1.9 miles encompassed by Alternative 3), 699198 (2.0 miles), and 699238 (1.3 miles). A total of 5.2 miles of existing open routes would be impacted under *Revised* Alternative 3. The distance between the Stateline Wilderness Area and the Primm Valley Golf Course would be the same under *Revised* Alternative 3 as under the Proposed Action.

Construction

Employment associated with construction of *Revised* Alternative 3 would be the same as under the Proposed Action. Therefore, potential impacts to recreational resources would be the same as described under “Construction” for Alternative 1.

Operation and Maintenance

Employment associated with operations of *Revised* Alternative 3 would be the same as under the Proposed Action. Therefore, potential impacts to recreational resources would be the same as described under “Operation and Maintenance” for Alternative 1.

Decommissioning

Employment associated with decommissioning of *Revised* Alternative 3 would be the same as under the Proposed Action. Therefore, potential impacts to recreational resources would be the same as described under “Decommissioning” for Alternative 1.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be approximately the same under *Revised* Alternative 3 as Alternative 1. Modification of the boundary of the existing Ivanpah DWMA would not have an adverse impact on recreation resources in the area. The DWMA and surrounding area would remain available for their current recreational activities including land sailing, hiking, camping, and other activities. In addition, the expansion of the boundaries of the DWMA to encompass an additional *23,821* acres under *Revised* Alternative 3 would remove that area from future development for renewable energy and other uses, ensuring that it would remain available for its current recreational uses. Recreational activities within the additional DWMA acreage would be subject to restrictions, as discussed in the NEMO plan amendments (BLM 2002). This would include restricting stopping, parking, and camping to disturbed areas within 100 feet of the centerline of open routes. Overall, the modification of the DWMA boundary would constitute a beneficial impact to recreational resources.

4.12.5.2 CEQA Significance Determinations

The CEQA significance determinations of recreation impacts for *Revised* Alternative 3 would be identical to Alternative 1.

4.12.6 Alternative 4: Reduced Acreage Alternative

4.12.6.1 Direct and Indirect Impacts

Alternative 4 is conceptually similar to the Proposed Action (Alternative 1), but would be placed within a different land area which comprises 1,766 acres. The land area associated with Alternative 4 would be the same as the northern portion of the bifurcated footprint of Alternative 2. The proximity of the facility to the Dry Lake Bed is closer under Alternative 4 than the Proposed Action. The facility would be directly adjacent under Alternative 4 and approximately 750 feet away under the Proposed Action. Being closer, it is possible that impacts to recreational users of the Dry Lake Bed, including potential modification of wind patterns, could be greater under Alternative 4 than the Proposed Action.

The onsite recreational uses that would be eliminated by the fencing and removal of the facility under Alternative 4 would be the same as those eliminated under Alternative 1, but in a different area. Like the Proposed Action, routes that are currently designated as open would be closed, and re-routed around the facility. The Alternative 4 project area includes two routes of travel designated by BLM as open routes. These routes include route 699198 (1.6 miles encompassed by the Alternative 4 project area) and 699238 (1.3 miles). A total of 2.9 miles of existing open routes would be impacted under Alternative 4. The distance between the Stateline Wilderness Area would be greater under Alternative 4 (approximately 6,500 feet) than under the Proposed Action (approximately 3,500 feet), resulting in a reduced impact on persons camping or hiking in the Wilderness Area.

Construction

Employment associated with construction of Alternative 4 would be the same as under the Proposed Action. Therefore, potential impacts to recreational resources would be the same as described under “Construction” for Alternative 1.

Operation and Maintenance

Employment associated with operations of Alternative 4 would be the same as under the Proposed Action. Therefore, potential impacts to recreational resources would be the same as described under “Operation and Maintenance” for Alternative 1.

Decommissioning

Employment associated with decommissioning of Alternative 4 would be the same as under the Proposed Action. Therefore, potential impacts to recreational resources would be the same as described under “Decommissioning” for Alternative 1.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be approximately the same under Alternative 4 as Alternative 1. Modification of the boundary of the existing Ivanpah DWMA would not have an adverse impact on recreation resources in the area. The DWMA and surrounding area would remain available for their current recreational activities including land

sailing, hiking, camping, and other activities. In addition, the expansion of the boundaries of the DWMA to encompass an additional *23,740* acres under Alternative 4 would remove that area from future development for renewable energy and other uses, ensuring that it would remain available for its current recreational uses. Recreational activities within the additional DWMA acreage would be subject to restrictions, as discussed in the NEMO plan amendments (BLM 2002). This would include restricting stopping, parking, and camping to disturbed areas within 100 feet of the centerline of open routes. Overall, the modification of the DWMA boundary would constitute a beneficial impact to recreational resources.

4.12.6.2 CEQA Significance Determinations

The CEQA significance determinations of recreation impacts for Alternative 4 would be identical to Alternative 1. Alternative 4 would not result in a substantial lessening of any significant environmental impacts.

4.12.7 Alternative 5: No Action Alternative

4.12.7.1 Direct and Indirect Impacts

Under this alternative, the BLM would not approve the proposed solar facility and would not amend the CDCA Plan. As a result, no solar energy project would be constructed, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, no new structures or facilities would be constructed or operated on the site and no new ground disturbance would occur. As a result, none of the impacts on recreational resources from construction or operation of the project would occur.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under the No Action Alternative. Land uses associated with the Ivanpah DWMA would continue as they are today, but the beneficial impacts that would result from these actions would not occur. The No Action Alternative would not have any adverse impact on recreational resources, but it also would not have any of the beneficial impacts associated with limiting future land uses.

4.12.7.2 CEQA Significance Determinations

There would be no impacts to recreational resources under Alternative 5.

4.12.8 Alternative 6: No Project, Exclude Solar Alternative

4.12.8.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. As a result, no solar energy project would be constructed on the site, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. It is expected that the site would remain in its existing condition unless another use is designated in this amendment. As a result, access to the site would not change and recreation activities would continue without any disruptions from construction of solar energy facilities.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be approximately the same under Alternative 6 as Alternative 1. Modification of the boundary of the existing Ivanpah DWMA would not have an adverse impact on recreation resources in the area. The DWMA and surrounding area would remain available for their current recreational activities including land sailing, hiking, camping, and other activities. In addition, the expansion of the boundaries of the DWMA to encompass an additional 25,506 acres under Alternative 6 would remove that area from future development for renewable energy and other uses, ensuring that it would remain available for its current recreational uses. Recreational activities within the additional DWMA acreage would be subject to restrictions, as discussed in the NEMO plan amendments (BLM 2002). This would include restricting stopping, parking, and camping to disturbed areas within 100 feet of the centerline of open routes. Overall, the modification of the DWMA boundary would constitute a beneficial impact to recreational resources.

4.12.8.2 CEQA Significance Determinations

There would be no impacts to recreational resources under Alternative 6.

4.12.9 Alternative 7: No Project, Approve Solar Alternative

4.12.9.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The Stateline Solar Farm Project would not be constructed on the project site and the project site would remain vacant in the near-term. It is possible that another solar energy project could be constructed on the site. If this were to occur, it is likely that construction and operation impacts to recreational resources would be similar to the impacts described for the Proposed Action.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 7, so the beneficial impact of that action would not occur. Land uses associated with the Ivanpah DWMA would continue as they are today. If a solar or other renewable energy facility is proposed on the site in the future, the impact on recreational resources would be considered in a project-specific environmental analysis that would occur at that time.

4.12.9.2 CEQA Significance Determinations

There would be no impacts to recreational resources under Alternative 7.

4.12.10 Cumulative Impacts

4.12.10.1 Geographic Extent/Context

Construction of the Proposed Action would have effects on the existing recreation activities on the project site and surrounding recreation areas discussed in Section 4.12.3.1. The geographic extent of analysis are the boundaries of the proposed facility, as well as locations within adjacent and local recreational areas from which the proposed facility would be visible, including Primm Valley Golf Course; Primm Resorts; the Stateline, Mesquite, and Clark Mountain Wilderness Areas; the Mojave National Preserve; and Ivanpah Dry Lake. This

analysis includes the renewable energy projects within the Ivanpah Valley area which may incur similar impacts to the local recreational resources as the proposed Stateline Solar Farm facility.

4.12.10.2 Existing Cumulative Conditions

Past and present projects occurring in the vicinity of the proposed facility include recreational activities; mining; solar development; utility corridors used for transmission of electric power, natural gas, petroleum products and communications; transportation infrastructure (highway and railroad, both existing and proposed); and grazing.

Regionally, there have been both positive and negative impacts to recreational resources as a result of development projects within Ivanpah Valley. Improvement of highway access to the Valley, through the construction of I-15, provided direct vehicular access to open desert scenery for residents throughout southern California and Las Vegas. This increased access certainly improved the recreational experience for some users by making the area more accessible, and detracted from the recreational experience for other users who preferred remote camping, hiking, and hunting away from populated areas. Some industrial and commercial development projects, including the Proposed Action, would remove some lands from potential recreational use, and would provide an impact on the viewscape that would diminish the recreational experience to some degree. Other development projects, including the Primm casinos and Primm Valley Golf Course, have been successful in drawing people to the area for different recreational activities.

Overall, the impact to recreationists from these projects is subjective, because some may be drawn to the development, while others would seek to avoid it. Recreational use of the Primm Casinos and Primm Valley Golf Course is likely to be unaffected, or possibly increase, due to increased ease of access and development of other similar attractions. Conversely, visitors looking to enjoy quality hiking, camping, and other outdoor activities in the surrounding area will be impacted by the diminished natural setting during their drive to those locations, but will be able to continue to enjoy those opportunities recognizing a degraded visual background in some settings.

4.12.10.3 Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects, various BLM authorized actions/activities, proposed or approved projects within the County's jurisdiction, and other actions/activities that the agencies consider reasonably foreseeable. Table 4.1-2 summarizes the cumulative projects that would have the potential to combine with the Proposed Action and result in cumulative impacts to recreational resources. Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA, or will do so prior to approval. Even if environmental review has not been completed for the cumulative projects described in Table 4.1-2, their effects were considered in the cumulative impacts analysis in the *PA and* EIS/EIR.

Projects currently under construction in the vicinity of the proposed facility include the Ivanpah SEGS solar facility (3,471 acres). Proposed projects in the vicinity of the proposed facility that would have potentially adverse impacts to recreation include the Southern Nevada Supplemental Airport, Desert Xpress high speed passenger rail line, Silver State Phase 2 solar facility, and the Calnev Pipeline Expansion Project.

4.12.10.4 Cumulative Impacts Associated with Proposed Action

Construction

The proposed developments near the project site that would have the potential to induce cumulative impacts to recreational resources include thousands of acres of renewable energy generation projects that would have remove lands from their current availability for recreation.

Recreational use of Ivanpah Dry Lake for land sailing and related events may be impacted if the unique character of the Dry Lake surface is modified through a change in sedimentation and erosion, through introduction of foreign materials, or through a cumulative modification of wind characteristics. With respect to changes in sedimentation and erosion and introduction of foreign materials, the projects that could contribute to create a cumulative impact are those located upgradient of the Dry Lake, including the proposed facility and the Ivanpah SEGS facility. As discussed for both potential impacts for the Proposed Action, mitigation measures developed for water resources would ensure that no impacts occur as a result of the Proposed Action. Similar mitigation measures were required, and have been implemented, for the Ivanpah SEGS facility. Therefore, neither facility would contribute sediment or foreign materials to the Dry Lake Bed, and cumulative impacts would not occur.

The combined projects in Table 4.1-2 would eliminate recreation within 25,632 to 26,141 acres in the Ivanpah Valley area. If Clark County were to restrict access to the 17,000-acre Noise Compatibility Area, cumulative recreation lands affected would total approximately 43,000 acres. The cumulative loss of recreation opportunities likely would place pressure on other Mojave Desert lands that are not subject to development. Displaced recreational users likely would turn to lands that currently are not used for recreation purposes. As currently unused lands become used more, they would degrade accordingly. Under such circumstances, direct and indirect adverse cumulative impacts to recreation would occur.

Cumulative impacts associated with existing and proposed energy plant and transmission infrastructure construction, operation and maintenance traffic in the west Ivanpah Dry Lake area is expected to result in recreating public confusion, frustration and potentially unsafe conditions associated with construction activities. Mitigation measure MM-Rec-2 describes mitigation measures that would be required to address these conditions and alleviate the cumulative traffic concerns.

Operation and Maintenance

It is expected that all of the cumulative projects described above would be operational at the same time as the Proposed Action. As a result, there may be long-term impacts during operation of those cumulative projects related to recreational resources.

The Proposed Action would contribute to these possible long-term operational cumulative impacts since more than 25,000 acres of land are proposed for solar energy and other developments in the Ivanpah Valley area. The conversion of these lands would preclude numerous existing land uses *for the long-term* including recreation, wilderness, rangeland, and open space. Because the Proposed Action would preclude recreational land use on the 2,143 acre project footprint, operation of the Proposed Action would contribute, incrementally, to this reduction in land available for recreation.

Decommissioning

The decommissioning of the Proposed Action is expected to result in adverse impacts similar to those identified for construction. Disruptions from the decommissioning activities associated with other renewable energy and other projects would have the potential to combine with those

of the Proposed Action, which could result in an adverse cumulative impact to recreational resources. However, the Proposed Action's contribution to cumulative impacts to recreation during decommissioning would be temporary. Following decommissioning, the land area associated with the Proposed Action would become available for recreation, and adverse impacts would cease.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the existing Ivanpah DWMA would have an effect on future land uses that are authorized within the newly added portion of the DWMA. The land use restrictions that are currently applied to the 37,280 acre Ivanpah DWMA, which are discussed as part of the evaluation of the Proposed Action, would be extended to cover an additional 23,363 acres within the Northern Ivanpah Valley Unit. These land use restrictions include some restrictions on recreational uses, including use of washes as routes and approved locations for stopping, parking, and camping. Given that recreational uses have also been restricted in the area by other similar management actions and development of solar facilities, these actions could potentially contribute to an adverse cumulative effect to some recreational users. However, extending the DWMA to cover an additional *23,363* acres would place limitations on future development that would generate surface disturbance in that area, thus allowing the area to remain open to recreational uses. In this manner, the modification of the boundary of the DWMA would contribute beneficially to the preservation of open space for recreational use in the area.

4.12.10.5 CEQA Significance Determinations

Rec-1

The Proposed Action is not expected to increase the use of regional recreation facilities such that the physical deterioration of the facilities may occur. The physical deterioration of recreational resources would be less than significant given the limited addition of people to the area during construction, operations and maintenance, and decommissioning, and the numerous recreational opportunities in the project vicinity. Therefore, the Proposed Action would not contribute incrementally to a cumulative impact to recreational resources.

4.12.10.6 Alternatives

Alternative 2: 2,385 Ac Alternative

The impacts to recreational resources associated with Alternative 2 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with Alternative 2 would be the same as those described above for the Proposed Action.

***Revised* Alternative 3: *1,685* Ac Alternative**

The impacts to recreational resources associated with *Revised* Alternative 3 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with *Revised* Alternative 3 would be the same as those described above for the Proposed Action.

Alternative 4: Reduced Acreage Alternative

The impacts to recreational resources associated with Alternative 4 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with Alternative 4 would be the same as those described above for the Proposed Action.

Alternative 5: No Action Alternative

Alternative 5, the No Action Alternative, would not contribute to any of the potentially adverse impacts to recreational resources as the action alternatives. However, it would also not result in the beneficial impacts to recreation that would be associated with the modification of the boundary of the Ivanpah DWMA. The No Action Alternative would allow recreational activities to occur on the project site, and in the general area, as they do today. In addition, it would continue the current situation of allowing BLM to consider other land uses, including land uses that could preclude recreation (such as additional development of solar power facilities), on the project site and in the Northern Ivanpah Valley Unit.

Alternative 6: No Project, Exclude Solar Alternative

By denying the solar energy application, Alternative 6 would allow existing recreational land uses to continue on the project site as they are today. Therefore, this alternative would not contribute to impacts associated with the removal of the 2,143 acre Proposed Action footprint from recreational land use. In addition, by excluding the proposed facility area from future solar development, which would preclude recreational use, Alternative 6 would provide a beneficial contribution to the amount of land area available for recreational use.

Alternative 7: No Project, Approve Solar Alternative

By denying the solar energy application, Alternative 7 would allow existing recreational land uses to continue on the project site as they are today. In addition, Alternative 7 would not include any management actions that restrict future recreational use of the site. Although this would be beneficial in not restricting recreational uses, it could allow land uses, such as renewable energy development, that would preclude recreational use in the future.

4.12.11 Mitigation Measures

Impacts to recreational resources would be reduced by implementation of the following mitigation measures.

MM-Rec-1: Maintenance of Access to Open Routes. The applicant shall allow and be required to afford public access to the routes for which BLM grants a right of way, as noted above. By allowing public access to the routes that are redirected around the project perimeter, the current level of public access to recreational areas would be maintained.

MM-Rec-2: Interpretive Features. *The Applicant shall develop and install interpretive features to be located at the western Ivanpah Dry Lake Recreation Area northern access points. The interpretive features shall include:*

Arrowhead Auto Trail Signs

Dark brown four inch square steel tubing posts with caps and vertical strip decals shall be installed along the Historic Arrowhead Trail (NS238) from Whiskey Pete's Hotel/Casino to Colosseum Road and intersections in between to guide visitors to recreation facilities in the vicinity of the west dry lake. Replacement vertical strip decals shall be provided to the BLM for maintenance purposes.

BLM Administrative Portal Sign

A large format BLM truncated Portal Sign (48" height x 96" width with image banner) identifying the recreation area shall be installed off of Arrowhead Highway (NN238), on the California side of the California-Nevada state line. The Portal Sign shall consist of a three-tier dark brown BLM truncated sign including agency identification, a Recreation Area landsailing yacht image banner, and Recreation Area identification with ledgestone masonry base and concrete lentil.

Interpretive Site

An interpretive site shall be located at the intersection of designated open routes NN135 and NN238, northwest of Whiskey Pete's Hotel/Casino rear parking area. The site shall consist of:

- *Post and cable site delineation, consistent in design with the lake bed protective barrier in the same vicinity, including the parking area and interpretive area with pedestrian walk through.*
- *Parking area accommodating 6 automobiles and 2 pull-through spaces for vehicles with trailers.*
- *Information Kiosk, with dark brown square tube steel construction and light brown roof with rib/standing seam panel roofing design.*
- *Interpretation Panels, including First Solar project interpretation; Ivanpah Valley natural landmarks and ecological interpretation; Arrowhead Auto Trail history with Arrowhead Trails Association historic map; Ivanpah Dry Lake Recreation Area interpretation including sport types, rules (BLM provided), history and technology (landsailing, kite buggying, long distance archery, national and international regattas, Greenbird wind powered land speed record); BLM public land management interpretation (BLM provided); map of western Ivanpah Valley open routes and dry lake access/staging areas; and replacement panels and digital graphics provided to BLM for maintenance purposes.*

BLM Recreation Site Location Signs

Two BLM truncated recreation identification signs (18" height x 54" width with landsailing yacht image) identifying Ivanpah Dry Lake Staging Areas shall be mounted on 4" X 4" posts and installed at the intersection of Arrowhead Highway (NS238) and the northwest staging area access road, and at the intersection of Arrowhead Highway (NS238) and the Eldorado Ivanpah Transmission Line road on the southwest staging area access road.

At least 90 days prior to commercial operation of the solar plant, the Applicant shall submit plans to BLM's Authorized Officer for review and approval for the interpretive site and other recreation enhancements. BLM will review and advise the Applicant within 60 days on the completeness of the plans. The owner shall address BLM's comments on the plans and

resubmit for final approval prior to commercial operation. Once final approval of the plans has been received, construction of the Solar/Ecological Interpretive Site and other recreational facilities can begin, and shall be completed within 6 months.

4.12.12 Residual Impacts After Mitigation

With implementation of mitigation measures MM-Rec-1 *and MM-Rec-2*, the Proposed Action would have no unavoidable adverse impacts related to recreational resources.

4.13 Social and Economic Issues

4.13.1 Methodology for Analysis

Based on the scope of the Proposed Action and alternatives, and the affected environment where the proposed project would be located, the following potential impacts on social and economic issues have been identified for evaluation:

- Change to the current and projected population level of the study area or function as an inducement to population growth;
- Change in expenditures for goods and services and infrastructure spending within the study area;
- Short-term or long-term impacts on employment by increasing or decreasing the employment and income levels within the study area;
- Displacement of residences within the community or placing increased demands on *long-term* and temporary housing resources that could not be absorbed by the existing housing stock (i.e., create excess demand conditions);
- Strain on existing local government public service capacities such that the level of service standards are not met; or
- Long-term impacts on local tax revenues and sources of funding.

4.13.2 CEQA Significance Criteria

The following criteria were used to determine the significance of impacts under CEQA:

- Soc-1: Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure);
- Soc-2: Displace substantial numbers of existing housing, or necessitate the construction of replacement housing elsewhere; or
- Soc-3: Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

For the Proposed Project and alternatives, the criteria numbered Soc-2 and Soc-3 were determine to not be applicable, as there are no established communities on or adjacent to the project site, and the Proposed Project and alternatives would not displace existing housing or people. Therefore, these criteria are not addressed further in the impact analysis presented in this section.

It should be noted that under CEQA social and economic effects in and of themselves are not considered significant effects on the environment.

4.13.3 Alternative 1: Proposed Action

4.13.3.1 Direct and Indirect Impacts

This section addresses potential direct and indirect impacts to population, income, employment, and housing resulting from the proposed project's construction, operations and maintenance, and decommissioning associated with Alternative 1: Proposed Action.

Construction

Construction of the proposed project would occur in two phases: 1) construction mobilization, and 2) construction and installation of the project components (solar modules, electrical, and gen-tie line). The construction process would take approximately 2 to 4 years with an average on-site workforce of approximately 400 employees; the construction employment would peak at about 600 employees.

Changes to Local Employment or Labor Force

The majority of the workforce would commute to the worksite from nearby population centers within San Bernardino County, California and Clark County, Nevada. Research shows that construction workers would commute as much as two hours each direction from their communities rather than relocate (EPRI 1982). The proposed project is located near the I-15 which provides good access from communities in San Bernardino, California and Las Vegas, Nevada, approximately 50 miles from the project site. Since the project site is located in a relatively rural area and within a one-hour drive from population centers, it is not anticipated that workers would relocate to the project vicinity.

Table 3.13.4 indicates a total of approximately 117,000 construction workers available in the combined San Bernardino County, California and Clark County, Nevada workforce. The proposed project would require 600 construction workers at construction peak, which represents less than 1 percent of the total construction workforce. Since less than 1 percent of the total construction workforce would be required and minimal in-migration is expected, impacts to the local employment or labor force are not anticipated.

Changes in Revenue

Local businesses in nearby communities such as Baker, California and Primm, Nevada would benefit from construction worker employment through increased sales tax revenues. Workers spending their wages on services such as gas, food, and beverages would provide an economic benefit to the local economy. A few employees would require temporary lodging; therefore, local hotels in the immediate vicinity of the project site would realize a benefit in increased revenues, which in turn would also increase sales tax revenue. Additionally, the proposed project would increase sales taxes locally and regionally through the purchase of goods and services related to project construction. A beneficial impact to local revenues in nearby communities is expected during construction of the proposed project.

There are no existing businesses located within the proposed project site; therefore, no business would have to be removed or relocated. No impacts are expected resulting from displacement of existing business and loss of local business revenue.

Operation and Maintenance

During operations and maintenance, seven to ten fulltime workers (management, engineering, skilled works, administrative staff) are expected to be employed at the project site. The following discusses the potential impacts to social and economic issues resulting from the proposed project operations.

Changes to Local Employment or Labor Force

Research shows that operational workers would commute as much as one hour to the project site rather than relocate (EPRI 1982). Since population centers (e.g. Las Vegas, Nevada and

surrounding rural communities in San Bernardino County) are located within a one-hour drive from the proposed project site, permanent in-migration is not expected. No impacts to local employment or labor force are expected during operations of the Proposed Action.

Changes in Revenue

Over the 30-year operational life of the proposed project, it is estimated that approximately $80 million dollars in sales tax and approximately $20 million in property taxes are expected to benefit local and country-wide tax revenues. Sales tax revenue would provide economic benefit for the two key taxing agencies within the project area, San Bernardino County, California and Clark County, Nevada. The actual amount of property tax revenues in any particular year would depend on annual valuation assessments by applicable authorizes and their respective revenue requirement and resulting tax levies.

Decommissioning

As discussed in Section 2.1.3.4 Decommissioning, the proposed project would be decommissioned and project facilities would be removed following a 30-year project lifetime. The project area would be reclaimed and restored according to applicable regulations and the applicant-prepared Decommissioning Plan. Beneficial economic operational benefits including worker payroll and project expenditures would no longer be generated in the local economy.

Personnel would be required for decommissioning activities and would likely commute from San Bernardino County, California and Clark County, Nevada. Temporary beneficial impacts from purchase of goods and services (e.g. food, fuel, and lodging accommodations) would be expected during decommissioning.

Tax receipts in the county would be reduced over the life of the project because of facility depreciation and project decommissioning would result in a decrease of the tax base in San Bernardino County. This change would represent an adverse impact to tax revenues during project decommissioning.

Modify Boundary of Ivanpah DWMA

Modifying the boundary of the existing Ivanpah DWMA would not affect social and economic issues. Changes to employment and revenue are not anticipated to occur.

4.13.3.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) are presented below based on the CEQA Significance Criteria. Significance criterion Soc-1 was determined to be relevant to the project and is addressed below:

Soc-1

Construction

The proposed project is located in a rural area and construction workers would commute from population centers located in San Bernardino County. Construction workers required for the project represent less that 1 percent of the San Bernardino County construction workforce; therefore, it is not expected that the proposed project would induce population growth in the

project area. Consequently, construction of the proposed Stateline facility would not substantially increase the population, and any impacts would be less than significant.

Operation and Maintenance

Operational labor would commute to the proposed project from population centers in San Bernardino County. Operational labor accounts for only 7 to 10 workers; therefore, changes to population are not anticipated and induced population growth is not expected. Consequently, operations of the proposed Stateline facility would not substantially increase the population, and any impacts would be less than significant.

Decommissioning

The workforce requirements for decommissioning would be similar to project construction and most workers would commute to the project site from population centers in San Bernardino County. Impacts to labor and employment would be the same as identified during the construction phase. Induced population growth in the project area resulting from decommissioning would not occur. Consequently, decommissioning of the proposed Stateline facility would not substantially increase the population, and any impacts would be less than significant.

4.13.4 Alternative 2: 2,385 Ac Alternative

4.13.4.1 Direct and Indirect Impacts

This section addresses potential direct and indirect impacts to population, income, employment, and housing resulting from the proposed project's construction, operations and maintenance, and decommissioning associated with Alternative 2.

Construction

Alternative 2 would require the same number of construction workforce, equipment, and schedule as previously described in the Proposed Action. Impacts to employment during construction would be the same for Alternative 2 as described in the Proposed Action. Economic benefits associated with increased sales tax to local communities and additional property tax revenues in San Bernardino County would be the same for Alternative 2 as described for the Proposal Action.

Operation and Maintenance

Alternative 2 would require the same number of operations personnel as identified in Alternative 1, the Proposed Action. Impacts to employment during project operations would be the same for Alternative 2 as described for Alternative 1. Economic benefits associated with property tax revenues in San Bernardino County would be the same for Alternative 2 as described for the Proposed Action.

Decommissioning

Alternative 2 would require the same number of decommissioning personnel as identified for the Proposed Action. Impacts to employment during decommission would be the same for Alternative 2 as described for the Proposed Action.

Modify Boundary of Ivanpah DWMA

Modifying the boundary of the existing Ivanpah DWMA would not affect social and economic issues under Alternative 2. Changes to employment and revenue are not anticipated to occur.

4.13.4.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) are presented below based on the CEQA Significance Criteria. Only those significance criteria which were determined to be relevant to the project are addressed below:

Soc-1

The workforce requirements for construction, operation, and decommissioning would be the same for Alternative 2 as for Alternative 1. Most workers would commute to the project site from population centers in San Bernardino County, and induced population growth in the project area resulting from construction, operations, and decommissioning is not expected. Any impacts would be less than significant.

4.13.5 *Revised* Alternative 3: *1,685* Ac Alternative

4.13.5.1 Direct and Indirect Impacts

This section addresses potential direct and indirect impacts to population, income, employment, and housing resulting from the proposed project's construction, operations and maintenance, and decommissioning associated with *Revised* Alternative 3: *1,685* acre Alternative.

Construction

Revised Alternative 3 would require the same number of construction workforce, equipment, and schedule as identified for the Proposed Action. Impacts to employment during project construction would be the same under *Revised* Alternative 3 as described for the Proposed Action. Economic benefits associated with increased sales tax to local communities from the purchase of goods and services and additional property tax revenues in San Bernardino County would be the same for *Revised* Alternative 3 as previously described for the Proposed Action.

Operation and Maintenance

Social and economic impacts during operation and maintenance activities under *Revised* Alternative 3 would be the same as previously described for the Proposed Action.

Decommissioning

Revised Alternative 3 would require the same number of decommissioning personnel as identified for Proposed Action as previously described. Impacts to social and economic issues during decommissioning would be the same for *Revised* Alternative 3 as described for the Proposed Action.

Modify Boundary of Ivanpah DWMA

Modifying the boundary of the existing Ivanpah DWMA would not affect social and economic issues under *Revised* Alternative 3. Changes to employment and revenue are not anticipated to occur.

4.13.5.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) are presented below based on the CEQA Significance Criteria. Only those significance criteria which were determined to be relevant to the project are addressed below:

Soc-1

The workforce requirements for construction, operation, and decommissioning would be the same for *Revised* Alternative 3 as for Alternative 1. Most workers would commute to the project site from population centers in San Bernardino County, and induced population growth in the project area resulting from construction, operations, and decommissioning is not expected. Any impacts would be less than significant.

4.13.6 Alternative 4: Reduced Acreage Alternative

4.13.6.1 Direct and Indirect Impacts

This section addresses the potential direct and indirect impacts to population, income, employment, and housing resulting from the proposed project's construction, operations and maintenance, and decommissioning associated with Alternative 4: Reduced Acreage Alternative. Alternative 4 is conceptually similar to the Proposed Action (Alternative 1), but would be placed within a different land area which comprises 1,766 acres. The land area associated with Alternative 4 would be the same as the northern portion of the bifurcated footprint of Alternative 2.

Construction

Alternative 4 would require the same number of construction workforce, equipment, and schedule as previously described for the Proposed Action. While the alternative reduces the total footprint of the project, the same level of effort would be required during construction, although construction would last for a shorter duration. Impacts to social and economic issues during construction would be the same as described for the Proposed Action.

Operation and Maintenance

Alternative 4 would require the same number of operations personnel as identified previously described for the Proposed Action. Impacts to social and economic issues during operations would be the same for Alternative 4 as previously described for the Proposed Action.

Decommissioning

Alternative 4 would require the same number of decommissioning personnel as identified for the Proposed Action. Like construction, the number of workers would be approximately the same as those for the Proposed Action, but the decommissioning period would last for a shorter

duration. Impacts to social and economic issues during decommissioning would be the same for Alternative 4 as previously described.

Modify Boundary of Ivanpah DWMA

Modifying the boundary of the existing Ivanpah DWMA would not affect social and economic issues under Alternative 4. Changes to employment and revenue are not anticipated to occur.

4.13.6.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) are presented below based on the CEQA Significance Criteria. Only those significance criteria which were determined to be relevant to the project are addressed below:

Soc-1

The workforce requirements for construction, operation, and decommissioning would be the same for Alternative 4 as for Alternative 1. Most workers would commute to the project site from population centers in San Bernardino County, and induced population growth in the project area resulting from construction, operations, and decommissioning is not expected. Any impacts would be less than significant. In addition, Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

4.13.7 Alternative 5: No Action Alternative

4.13.7.1 Direct and Indirect Impacts

Under Alternative 5, the proposed project would not be approved by the BLM and the agency would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the Project Study Area. The BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the socioeconomic impacts of the *Proposed Action* and the public benefits that could occur as a result of the *Proposed Action* would not happen.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under the No Action Alternative. Land uses associated with the Ivanpah DWMA would continue as they are today. The No Action Alternative would not have any adverse impact on social and economic conditions.

4.13.7.2 CEQA Significance Determinations

Alternative 5 would not result in impacts to social and economic issues.

4.13.8 Alternative 6: No Project, Exclude Solar Alternative

4.13.8.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. The BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. *Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the socioeconomic impacts of the Project and the public benefits that could occur as a result of the Project would not happen.*

Modify Boundary of Ivanpah DWMA

Modifying the boundary of the existing Ivanpah DWMA would not affect social and economic issues under Alternative 6. Changes to employment and revenue are not anticipated to occur.

4.13.8.2 CEQA Significance Determinations

Alternative 6 would not result in impacts to social and economic issues.

4.13.9 Alternative 7: No Project, Approve Solar Alternative

4.13.9.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The Stateline Solar Farm Project would not be constructed on the project site and the project site would remain vacant in the near-term. *Because no solar project would approved under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the socioeconomic impacts of the Project and the public benefits that could occur as a result of the Project would not happen.*

Under this alternative, other solar development could occur at the site *that could produce similar* social and economic effects. However, the impacts would not occur as a result of development of the proposed site at this time.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 7. Land uses associated with the Ivanpah DWMA would continue as they are today. *No social or economic impacts would occur.*

4.13.9.2 CEQA Significance Determinations

Alternative 7 would not result in impacts to social and economic issues.

4.13.10 Cumulative Impacts

Cumulative socioeconomic impacts analysis would include past, present, and reasonably foreseeable future actions that have or are expected to impact the area where the proposed project would be located. While the Proposed Action alone may not result in significant changes

to the environment, when combined with other actions, cumulative impacts over time could accumulate and result in an increased beneficial impact or adverse impacts to social and economic conditions.

4.13.10.1 Geographic Extent/Context

The geographic extent for analyzing the cumulative effects for socioeconomics is defined as San Bernardino County, California (primarily the eastern portion of the county) and Clark County, Nevada (specifically southern Clark County). The cumulative socioeconomic analysis will evaluate impacts based on the proposed project's lifespan and will include those actions that would occur during the same time as construction, operations, and decommissioning.

4.13.10.2 Existing Cumulative Conditions

Past development and population growth in the region have affected the population size and composition, settlement patterns, housing demand, business revenues and conflicts, as well as property values throughout the local area and region. Population increases have both an indirect and direct influence on development as housing demand increases and the workforce expands. In addition, continued development creates more infrastructure affecting business operations, revenues, and property values. Section 3.13 (Social and Economic Setting) describes existing socioeconomic conditions within the project area, including demographics, housing characteristics, and labor characteristics, which have developed as a result of the past and present projects that comprise existing cumulative conditions.

The existing projects within the region which have affected social and economic conditions include urban development in Las Vegas and southern Clark County. Projects in the area of the Proposed Action which have affected these conditions include I-15, the Union Pacific Railroad, Ivanpah SEGS, Silver State Phase I solar project, AT&T and Sprint fiber optic lines, the Kern River Gas Transmission Line, Calnev Petroleum Products Pipeline, the Walter Higgins Bighorn Generation Station, Molycorp Minerals facility, the LADWP and SCE transmission lines, the Primm Resort facility, and Primm Valley Golf Club. Socioeconomic impacts from the proposed project, in addition to these past and existing projects would combine with reasonably, foreseeable future projects to determine the cumulative effects on socioeconomics.

4.13.10.3 Reasonably Foreseeable Projects

Table 4.1-1 lists the reasonably foreseeable projects within the vicinity of the proposed project. Projects currently under construction in the vicinity of the proposed facility include the Ivanpah SEGS solar facility (3,471 acres). Proposed projects in the vicinity of the proposed facility that would have potentially adverse impacts to social and economic conditions include the Southern Nevada Supplemental Airport, Desert Xpress high speed passenger rail line, Silver State Phase 2 solar facility, and the Calnev Pipeline Expansion Project.

4.13.10.4 Cumulative Impacts Associated with Proposed Action

Construction

During construction of the proposed project, there could be an overlap of construction periods associated with the BrightSource Ivanpah SEGS project and other projects currently or proposed in the vicinity of the proposed project. These projects would draw on the same construction labor force as the proposed project. Additional employment would increase local purchase of materials, food, and services resulting in a cumulative economic benefit to the local

communities with sales tax revenues. Additional new projects would contribute to additional ad valorem tax revenues for San Bernardino County, California.

Changes to Local Employment or Labor Force

The proposed Stateline facility would draw on the same labor force as many of the other projects listed in Table 4.1-1, specifically Ivanpah SEGS, Molycorp Phoenix, Kern River Lateral, Calnev Expansion, and Silver State solar, and construction would likely occur at the same time as *one or more* of the other projects. The combined construction and operation demands of each of these projects, along with the proposed Stateline facility, are shown in Table 4.13-1.

Table 4.13-1. Cumulative Project Employment Levels

Project	Projected Peak Construction Employment	Projected Operations Employment
Stateline Solar Proposed Action	600	10
Ivanpah SEGS	959	90
Molycorp	NA[1] (1,000)	300
Calnev Pipeline	660	0
Kern River Lateral	NA[2]	0
JPOE	NA[2]	NA[1]
EITP	190	0
Silver State Solar Phase 1	0	Less than 10
Silver State Phase 2	583[3]	11
Total	**3,992**	**421**

1 – Not Available, but estimated based on verbal communications with Molycorp staff

2 – Not Available, but estimated to be minimal

3 – Estimated based on comparison of the 350 MW facility with the 300 MW Stateline project

As shown in Table 4.13-1, the Proposed Action, in combination with the other projects that are likely to be under construction at the same time, would require a maximum of approximately 4,000 workers if the peak construction periods for each project coincided. The contribution of the Proposed Action to this requirement is 600 workers, or approximately 15 percent. However, due to the large construction labor force available in San Bernardino and Clark Counties (117,000 persons), it is anticipated that the regional labor force would be sufficient to accommodate the planned projects, which would represent approximately 3.4 percent of the San Bernardino and Clark County construction labor force.

The cumulative influx in construction labor to the area could create demand for temporary housing that is greater than the existing supply of temporary lodging. There are expected to be some suitable and available temporary lodging at the Primm casinos, and a very large inventory of hotel accommodations are available in Las Vegas approximately 30 miles away. This would be more than sufficient temporary housing for construction workers seeking temporary housing under a peak construction work force scenario. Therefore, no adverse cumulative impacts would be expected to result related to employment, labor, and housing.

Changes in Revenue

The local businesses in nearby communities such as Baker, California and Primm, Nevada that would benefit from Stateline construction worker employment through increased sales tax revenues would similarly benefit from construction workers associated with the other cumulative projects. Workers spending their wages on services such as gas, food, and beverages would provide an economic benefit to the local economy, and the magnitude of this benefit would be increased by the cumulative projects occurring at the same time. Each of the projects could require a few employees to obtain temporary lodging; therefore, local hotels in the immediate vicinity of the project site would realize a benefit in increased revenues, which in turn would also increase sales tax revenue. Additionally, the proposed project, in combination with the cumulative projects, would increase sales taxes locally and regionally through the purchase of goods and services related to project construction. A beneficial impact to local revenues in nearby communities is expected during construction of the proposed project, and the existence of multiple projects occurring concurrently would increase this benefit.

There are no existing businesses located within the sites of any of the cumulative projects; therefore, no businesses would have to be removed or relocated. No impacts are expected resulting from displacement of existing business and loss of local business revenue.

Operations and Maintenance

As shown in Table 4.13-1, the Proposed Action, in combination with the other projects that are likely to be operating at the same time would require a maximum of approximately 421 workers. Given the proximity of the projects to major metropolitan areas with a combined population of almost 4 million persons in San Bernardino and Clark Counties, it is anticipated that the regional labor force would be sufficient to accommodate the planned projects. The proposed project would contribute to the beneficial cumulative social and economic impacts of other past, present, and reasonably foreseeable future projects. These beneficial cumulative impacts would be realized through increased property taxes in San Bernardino County and a negligible impact to sales tax revenues from the purchase of goods and services.

Decommissioning

During decommissioning of the proposed project, there could be an overlap of decommissioning activities from other projects in the vicinity of the proposed project. Impacts to housing, employment, and tax revenues would be expected to be the same, or somewhat lower than, those associated with construction.

Modify Boundary of Ivanpah DWMA

Modifying the boundary of the existing Ivanpah DWMA would not affect social and economic issues. Cumulative changes to employment and revenue are not anticipated to occur.

4.13.10.5 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) are presented below based on the CEQA Significance Criteria presented in Section 4.13.2. Only those significance criteria which were determined in Section 4.13.2 to be relevant to the project are addressed below.

Soc-1

Construction

Construction labor would be drawn from San Bernardino and Clark Counties and few workers from outside the region would be necessary for the project. Consequently, the proposed facility's contribution to any cumulative impacts on local employment or labor force would not be considerable. Any impacts would be less than significant.

Operation and Maintenance

Operational labor would be drawn from San Bernardino and Clark Counties and few workers from outside the region would be necessary for the project. Consequently, the proposed facility's contribution to any cumulative impacts on local employment or labor force would not be considerable. Any impacts would be less than significant.

Decommissioning

Decommissioning labor would be drawn from San Bernardino and Clark Counties and is anticipated to require a minute proportion of the combined construction labor force. Any contribution to cumulative impacts on labor and employment would not be considerable and would be less than significant.

4.13.10.6 Alternatives

Alternative 2: 2,385 Ac Alternative

The social and economic impacts associated with Alternative 2 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with Alternative 2 would be the same as those described above for the Proposed Action.

***Revised* Alternative 3: *1,685* Ac Alternative**

The social and economic impacts associated with *Revised* Alternative 3 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with *Revised* Alternative 3 would be the same as those described above for the Proposed Action.

Alternative 4: Reduced Acreage Alternative

The social and economic impacts associated with Alternative 4 would be the same as those associated with the Proposed Action. Cumulative impacts associated with Alternative 4 would be same as those described above for the Proposed Action.

Alternative 5: No Action Alternative

Under the No Action Alternative, the local communities and counties would not realize the social and economic benefits of the proposed project; therefore the No Action Alternative would not contribute to cumulative effects to social and economic condition.

Alternative 6: No Project, Exclude Solar Alternative

Under Alternative 6, the proposed project would not be approved at the current site, and the site would be unavailable for future solar development; therefore the beneficial social and economic benefits to the local communities and counties would not be realized. This alternative would not contribute to the cumulative social and economic effects.

Alternative 7: No Project, Approve Solar Alternative

Under Alternative 7, the project would be denied, but future solar projects or other development could occur at the site. *This alternative would not contribute to the cumulative social and economic effects*.

4.13.11 Mitigation Measures

No adverse impacts to the social and economic condition were identified for the Proposed Action and alternatives; therefore, no mitigation is required.

4.13.12 Residual Impacts After Mitigation

There are no adverse impacts to the social and economic condition resulting from construction, operation, or decommissioning of the Proposed Action.

4.14 Soil Resources

4.14.1 Methodology for Analysis

The following discussion addresses potential geology and soils-related environmental impacts associated with implementation of the Stateline Solar Farm Proposed Action and alternatives. It also recommends measures to reduce or avoid adverse impacts anticipated from construction, operation, and decommissioning of the project. A discussion of cumulative impacts related to geology and soil resources is also included.

Baseline conditions (see Section 3.14) were evaluated based on their potential to be affected by construction activities, operation and maintenance activities, and decommissioning of the Proposed Action or alternatives. Impacts to the geology and soil resources were identified based on the predicted interaction between construction, operation, and decommissioning with the baseline conditions.

The analysis in this section evaluates whether or not the proposed project would either directly or indirectly destroy a unique geological feature and whether or not the project would expose persons or structures to geologic hazards.

The California Building Code (2007) provides geotechnical and geological investigation and design guidelines which engineers must follow when designing a facility. As a result, the criteria used to assess the significance of a geologic hazard include evaluating each hazard's potential impact on the design and construction of the proposed facility. Geologic hazards include faulting and seismicity, liquefaction, dynamic compaction, hydrocompaction, subsidence, expansive soils, and landslides.

4.14.2 CEQA Significance Criteria

The following indicators were used to describe the impacts to soils resources pursuant to CEQA. These indicators are the same as the significance criteria for geology and soils listed in the CEQA Environmental Checklist, Appendix G of the CEQA Guidelines.

- SR-1: Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides;
- SR-2: Result in substantial soil erosion or loss of topsoil;
- SR-3: Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
- SR-4: Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property; or
- SR-5: Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

The following CEQA Guidelines criterion related to seismic hazards is addressed in Section 4.11 (Public Health and Safety) of this EIS/EIR.

- PH&S-1: Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map or based on other substantial evidence of a known fault;

- Strong seismic ground shaking; or
- Seismic-related ground failure, including liquefaction.

4.14.3 Alternative 1: Proposed Action

4.14.3.1 Direct and Indirect Impacts

A Phase I Geotechnical Reconnaissance Report was conducted in July 2008 to describe soil and geological suitability for the Stateline Solar Farm Project. This study is included as Appendix E of the Applicant's Plan of Development (First Solar 2011).

Construction

Construction activities that would affect soil resources include excavation, grading, and soil compaction to prepare the site for installation of project components. The impacts on soil and geological resources associated with construction of the Proposed Action are described below.

Mitigation measure MM-PH&S-1 would provide standard engineering design recommendations for mitigation of potential geologic hazards that include strong ground shaking; liquefaction; settlement due to compressible soils, subsidence associated with shrinkage of clay soils, hydrocompaction, or dynamic compaction; and the presence of expansive clay soils.

Soil Erosion and Loss of Topsoil

Several factors affect the potential for soil to be eroded by water or wind including soil texture, the length and percent of slope, vegetative cover, and intensity of rainfall or wind. In general, the surface of an alluvial fan (such as the setting for the proposed Stateline facility) is an active erosional and depositional surface. In this environment, processes such as downstream movement of soils, cutting of erosional channels, sedimentation into low-lying areas, and flash-flooding are natural, and may affect the entire area of the alluvial fan.

Although these processes occur naturally, project construction activities have the potential to modify the locations or rates of soil erosion and deposition. These modifications can result in damage to both onsite and offsite man-made features (such as flood damage to site structures), degradation of water quality, or modification of vegetation and wildlife habitat. Modification of erosion-potential characteristics may occur from a variety of sources, including:

- Removal of soil-stabilizing vegetation or cryptobiotic crusts due to site grading and vehicle movement; and
- Increase in stormwater flow velocity through a reduction in infiltration rate or modification of flow paths.

As discussed in Section 2.1.3.2.2, site preparation during construction would include removal of all vegetation within the project area, and then clearing and grading of the area. In addition, trenched excavations would be made to allow for installation of structure foundations, water pipelines, and power transmission lines. Clearing and grading within the solar array field would be accomplished using tractors with disking equipment. This method would preserve the underground root structure of disturbed plants, top soil nutrients, and seed base. Vibratory rollers would also be used in the solar array field to compact the soil and even out the surface after the disking is complete. There would be no excess excavated material from project construction. Soil excavation and fill requirements would be balanced. In each solar array field area, slopes would have a consistent grade limited to within 3.0 percent.

Although the grading method would be designed to incorporate the existing root structure, cryptobiotic soils, soil nutrients, and seed base into the soil surface, it would also remove the existing vegetation and soil crusts that currently serve to stabilize the soil surface. As a result, the soils remaining on the surface during and following construction would have an increased susceptibility to both wind and water erosion, as compared to current conditions. In addition, soil compaction could affect infiltration rates, and placement of structures could modify flow paths, both potentially resulting in increased stormwater velocity, and therefore increased erosional force.

To minimize the effects of construction to the soil, the Applicant has proposed a variety of construction methods and other features to protect site soils from erosion and downstream deposition. Section 2.1.3.1 outlines several proposed construction activities specifically designed to manage stormwater and reduce the potential for erosion and sedimentation impacts. These include avoidance of drainage channels, implementation of upstream debris basins to reduce stormwater flow velocities across the site, site grading to promote sheet flow, implementation of downstream sediment basins to capture increased sediment loads, and use of silt fence and fiber rolls for erosion protection.

The Applicant would construct and manage the debris and sediment basins in accordance with specifications in their Storm Water Management Plan (First Solar 2012k). The use of the basins, as well as the silt fence and fiber rolls, would be governed by the Applicant's Construction Stormwater Pollution Prevention Plan (SWPPP), which they would be required to obtain under the Clean Water Act. In addition, a variety of mitigation measures (MM-Water-7, MM-Water-8, MM-Veg-5, and MM-Air-1) would require the implementation of flood protection, soil stabilization, and revegetation efforts, each of which would further protect site soils during construction. Therefore, impacts due to soil erosion and loss of topsoil would be avoided or substantially reduced and adverse impacts would not result due to the Proposed Action.

Unstable Geologic Units

Impacts due to unstable geologic units could potentially occur if the proposed Stateline facility were to be placed directly on unstable soils, or if it were to be placed close enough to unstable soils that could be transported to the project site through a debris flow or landslide. As discussed in Section 3.14, the preliminary geotechnical analysis indicated that the proposed Stateline Solar Farm site is not located close enough to any of the surrounding hillside mountains to be affected by either a debris flow or a landslide.

Impacts due to placement of the facility directly on unstable soils could occur due to liquefaction, lateral spreading, dynamic compaction or hydrocompaction, subsidence, or expansive soils. Potential adverse impacts associated with these processes may include destabilization of project infrastructure, resulting in stability hazards to infrastructure in the immediate vicinity. The manner in which these processes can affect structures is as follows:

- Liquefaction is a loss of strength in soil when a stress such as that caused by an earthquake, is applied to susceptible soils such as loose saturated sands and silts. If liquefaction were to occur, project infrastructure could be destabilized, resulting in stability hazards to infrastructure in the immediate vicinity.
- Lateral spreading of the ground surface can occur within liquefiable beds during seismic events. Factors such as distance from the earthquake epicenter, the magnitude of the seismic event, and the thickness and depth of the liquefiable layers affect the amount of lateral spreading that may occur.
- Dynamic compaction can result from a decrease in soil volume and a corresponding increase in soil density during ground-shaking. The decrease in volume can result in settlement of overlying structures. Hydrocompaction can result from soils deposited

rapidly in a saturated state, then drying quickly leaving an unconsolidated low density deposit with a high percentage of voids.

- Subsidence is a settlement or lowering of the ground surface elevation due to factors such as tectonic movement, seismic compaction, hydrocompaction, consolidation induced by groundwater withdrawal, and consolidation under applied loads. Regional ground subsidence is typically caused by petroleum or groundwater withdrawal that increases the effective unit weight of the soil profile, increasing stress on deeper soils and resulting in consolidation or settlement of underlying soils.
- Soil expansion occurs when clay-rich soils with an affinity for water exist in-place at a moisture content below their plastic limit. The addition of moisture from irrigation, capillary tension, water line breaks, etc. causes the clay soils to collect water molecules in their structure, which in turn causes an increase in the overall volume of the soil. This increase in volume can correspond to movement of overlying structural improvements.

The limited laboratory testing conducted as part of the geotechnical analysis indicates that the near surface soils at the Stateline Solar Farm site may be sensitive to liquefaction when saturated with water (Geosphere Consultants 2008). As a result, the soils could also be subject to lateral spreading. However, to be subject to liquefaction, soils would have to be saturated. In general, the large depth to groundwater at the project location (more than 200 feet deep) implies that there is a low potential for liquefaction and lateral spreading at the project site. The proximity of the proposed facility in Alternative 1 to the Ivanpah Dry Lake (750 feet) could have an effect on the potential for soil saturation. During certain times of the year, following heavy rainfall, the Ivanpah Dry Lake does capture standing water that can take weeks or months to evaporate or infiltrate. Although the proposed facility would be located outside of the 100-year floodplain for the Dry Lake, and would therefore not be subjected to standing water, it would be located within several hundred feet (laterally) and a few feet (vertically) of the saturated soils on the Dry Lake bed. Therefore, facility structures could be subjected to liquefaction or lateral spreading.

The Applicant's geotechnical report (Geosphere Consultants 2008) did not evaluate the potential for site soils to be susceptible to dynamic compaction or hydrocompaction. Based on the hydrologic setting of the site soils, they could potentially have been deposited rapidly in a saturated state and then dried quickly, potentially leaving voids.

Local subsidence in the form of sinkholes has been observed along the northern edge of Ivanpah Dry Lake near the solar farm project site. While its potential cause can sometimes be attributed to groundwater withdrawal as well as other causes, in this case, the cause is believed to be from dehydration of clays between the soil surface and the water table that can result in a major loss of volume, and thus the collapse of overlying soils (Broadbent 2009). The potential for such shrinkage to affect structural components would need to be mitigated through facility design.

The Applicant's geotechnical report (Geosphere Consultants 2008) concluded that the soils on the Dry Lake bed have a moderate to high expansion potential, but that the soils outside of the Dry Lake bed have a low expansion potential. The report recommended that any structures placed on the lake bed be designed and constructed to account for the potential for soil expansion.

During preparation of the geotechnical report, Geosphere Consultants conducted a number of soil characteristics analyses to determine the potential for subsurface hazards at the Stateline Solar Farm project site. As reported in the geotechnical report, Geosphere Consultants found the ground surface across most of the project site was composed of very "loose and dry" soils and sediments. As a result, Geosphere Consultants recommended that "a relatively light bearing pressure be used in the design of the block foundations [for the photovoltaic panels]

and that the overall panel design include enough flexibility to absorb three to four inches of differential settlement across individual panel assemblies" (Geosphere Consultants 2008).

In the geotechnical report, Geosphere Consultants recommended that the Stateline Solar Farm site's susceptibility to liquefaction and seismically induced settlement should be further evaluated in conjunction with a more comprehensive subsurface exploration and geotechnical evaluation given the general seismicity of the area and the potential for groundwater to be present at the site (Geosphere Consultants 2008). Mitigation measure MM-PH&S-1 would address potential impacts related to liquefaction, dynamic compaction, subsidence, and expansive soils. Mitigation measure MM-PH&S-1 requires that design-level geotechnical studies to be performed by the Applicant shall include detailed characterization of subsurface conditions, including:

- Identification of any potentially detrimental chemicals or soil features;
- Excavation of potentially expansive of collapsible soils during construction and replacement with engineered backfill;
- Ground-treatment processes; and
- Redirection of surface water and drainage away from expansive soils.

Overall, although the site's geologic setting and soil characteristics could result in the presence of unstable units, any potential impacts resulting from unstable units would be minimal. Occupied structures on the facility would be limited to a few construction trailers and, ultimately, a small O&M Building that would be occupied by fewer than 10 workers. The proposed facility would not include any tall structures that could catastrophically fall due to soil instability. There are no nearby residents or other occupied structures that could be affected if a structure within the project boundary should fail. Therefore, the impacts associated with any potential instability would be minimal.

Soil Chemistry

Because of the high concentration of water-soluble sulfates in the lakebed soils, Geosphere Consultants recommended the concrete used in these areas be protected in accordance with ACI publication 318 (Geosphere Consultants 2008).

To prevent corrosion of ferrous metals from impacting soils in the project area, Geosphere Consultants recommended that a corrosion engineer be consulted to develop corrosion mitigation measures for the project and that the corrosion potential of the soils be verified during project construction. Potential mitigation measures may include:

- At least three inches of concrete cover where steel and wire concrete reinforcement is cast against soil or bedrock, unformed.
- Conduits for below ground utility lines should be non-metallic or be encased in non-metallic materials.
- A high-quality protective coating (such as 18-millimeter plastic tape, extruded polyethylene, coal-tar enamel, or Portland cement mortar) should be placed on below-grade ferrous metals.
- Dielectric fittings in ferrous utilities and/or exposed metal structures should be used to electrically insulate (isolate) below-grade from above-grade metals.

Implementation of such design measures described above should minimize the potential for subsurface hazards associated with soil chemistry at the Stateline Solar Farm site.

Operation and Maintenance

All of the potential impacts discussed above for construction would also apply to operation and maintenance of the proposed Stateline facility. Except for minor grading and gravel application to maintain access roads, no additional project activities would occur that could potentially result in soil erosion, damage due to unstable soils, or damage due to soil chemistry. Re-grading and re-graveling of access roads for routine maintenance would not alter the drainage patterns on-site, and would not lead to a substantial increase in erosion or loss of topsoil. It is anticipated that any increase in surface water runoff resulting from *long-term* project features would be location-specific, and that such effects would not influence surface runoff in a manner which would result in erosion or loss of topsoil.

However, the infrastructure existing on the project site would continue to be potentially affected by stormwater erosion and sedimentation, soil instability, or soil chemistry throughout the operational period of the project. Therefore, continuing use of Best Management Practices and inspection and monitoring programs would be required throughout the operational period to verify that constructed features, including stormwater management systems, compacted soil surface, roads, and vegetated areas continue to function as specified in the Applicant's management plans, permits, and BLM-specified mitigation measures. Mitigation measure MM-Water-9 would require that the stormwater management systems be operated, maintained, and monitored in accordance with the Applicant's Storm Water Management Plan (First Solar 2012k), and that response actions be taken to address any identified erosion, sedimentation, or stormwater damage issues.

Decommissioning

Decommissioning of the Stateline Solar Farm site would be done in accordance with the Applicant's preliminary Closure, Decommissioning, and Reclamation Plan (First Solar 2012d), required as part of mitigation measure MM-Lands-2. This Plan summarizes the activities that would take place during the decommissioning process. In general, potential impacts associated with decommissioning are expected to include potential soil erosion and sedimentation issues, similar to those for construction. This is because many of the decommissioning activities, including the removal of site structures, use of heavy equipment, and site grading would be similar to the construction activities. These activities could potentially increase the risk of soil erosion due to removal of stabilizing features such as structures, vegetation, soil crusts, and roads. Although protective measures such as stormwater management systems and BMPs (silt fences and fiber rolls) would protect site soils from erosion during construction, these features would be removed during decommissioning, and would not be present to protect site soils during most of the decommissioning period. Instead, protection of site soils during decommissioning would be dependent on re-establishment of original site drainage, vegetation, and soil crusts. In desert environments, these processes can take substantial lengths of time, so impacts could occur for the long-term during decommissioning.

Because site structures would be removed and the site would no longer be occupied, geologic hazards and soil chemistry would no longer have any potential to impact the facility.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of the Proposed Action would not have any effect on soil resources. By placing limitations on future land uses that cause surface disturbance within the newly added *23,363* acre area, this action would provide a beneficial impact in reducing the potential for the disturbance of existing soil resources.

4.14.3.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) are presented below based on the CEQA Significance Criteria. Only those significance criteria which were determined to be relevant to the project are addressed below:

SR-1

Construction, Operations and Maintenance, and Decommissioning

The Stateline Solar Farm project site is not located close enough to any of the surrounding hillside mountains to be affected by either a debris flow or a landslide. The project would not expose people or structures to potential substantial adverse effect, including the risk of loss, injury, or death involving landslides. No impact would occur under project construction, operations and maintenance, or decommissioning.

SR-2

Construction

As discussed above, modification of erosion-potential characteristics during construction could occur from a variety of sources, including:

- Removal of soil-stabilizing vegetation or cryptobiotic crusts due to site grading and vehicle movement; and
- Increase in stormwater flow velocity through a reduction in infiltration rate or modification of flow paths.

Removal of stabilizing materials and modification of flow paths would likely lead to an increase in soil erosion off of the site, and an increase in sedimentation in downstream areas. In the absence of protective measures, project infrastructure would be subject to potential damage from flash flooding on the alluvial fan. Without implementation of mitigation measures, potential soil erosion impacts would be significant.

The Applicant has proposed a variety of measures in their Plan of Development (First Solar 2011) and Storm Water Management Plan (First Solar 2012k) to reduce the potential for soil erosion. These measures would also be required and regulated under a Construction SWPPP, which the Applicant would be required to obtain under the Clean Water Act. In addition, a variety of mitigation measures (MM-Water-7, MM-Water-8, MM-Veg-5, and MM-Air-1) would require the implementation of flood protection, soil stabilization, and revegetation efforts, each of which would further protect site soils during construction. The potential for the Stateline Solar Farm project to cause erosion or loss of topsoil would be minimized by these BMPs, regulatory requirements, and mitigation measures. Potential impacts under significance criterion SR-2 would be less than significant after implementation of mitigation measures.

Operation and Maintenance

Like construction, the operation and maintenance of the Stateline Solar Farm could result in increased soil erosion if stormwater management systems are not maintained and operated as specified in the Applicant's Storm Water Management Plan and the mitigation measures. Without implementation of mitigation measures, potential soil erosion impacts would be significant. Therefore, mitigation measures MM-Water-7, MM-Water-9, and MM-Veg-5 would require the implementation of flood protection, stormwater management, soil stabilization, and

revegetation efforts, each of which would further protect site soils during operations. Potential impacts under significance criterion SR-2 would be less than significant after implementation of mitigation measures.

Decommissioning

Earth-disturbing activities during decommissioning would be similar to those required during construction, including excavation and grading. These activities could potentially increase the risk of soil erosion due to removal of stabilizing features such as structures, vegetation, soil crusts, and roads. Although protective measures such as stormwater management systems and BMPs (silt fences and fiber rolls) would protect site soils from erosion during construction, these features would be removed during decommissioning, and would not be present to protect site soils during most of the decommissioning period. Instead, protection of site soils during decommissioning would be dependent on re-establishment of original site drainage, vegetation, and soil crusts. In desert environments, these processes can take substantial lengths of time, so impacts could occur for the long-term during decommissioning. Without implementation of mitigation measures, potential soil erosion impacts would be significant.

Implementation of decommissioning in accordance with the Applicant's preliminary Closure, Decommissioning, and Reclamation Plan (First Solar 2012d), as required by mitigation measure MM-Lands-2, would facilitate site revegetation as rapidly as possible. Potential impacts under criterion SR-2 would be less than significant with the implementation of this mitigation measure.

SR-3

Construction, Operations and Maintenance, and Decommissioning

Impacts due to placement of the facility directly on unstable soils could occur due to liquefaction, lateral spreading, dynamic compaction or hydrocompaction, or subsidence. The Applicant's geotechnical report (Geosphere Consultants 2008) concluded that site soils could be sensitive to liquefaction if saturated, and that subsidence is known to be present on the edge of the Ivanpah Dry Lake. The report did not evaluate the potential for dynamic compaction or hydrocompaction, so the potential for these processes is unknown. Potential adverse impacts associated with these processes could include destabilization of project infrastructure, resulting in stability hazards to infrastructure in the immediate vicinity. The potential for these impacts, and the consequences of the impact, would be the same for project construction, operations and maintenance, and decommissioning.

Although the site's geologic setting and soil characteristics could result in the presence of unstable units, any potential impacts resulting from these unstable units would be minimal. Occupied structures on the facility would be limited to a few construction trailers and, ultimately, a small O&M Building that would be occupied by fewer than 10 workers. The proposed facility would not include any tall structures that could catastrophically fall due to soil instability. There are no nearby residents or other occupied structures that could be affected if a structure within the project boundary should fail. Therefore, the impacts associated with any potential instability would be less than significant. Further geotechnical studies and implementation of appropriate project design, as required by mitigation measures MM-PH&S-1, would further reduce the potential for impacts under significance criterion SR-3 to a less-than-significant level.

SR-4

Construction, Operations and Maintenance, and Decommissioning

Impacts due to placement of the facility directly on unstable soils could occur due to expansive soils. The Applicant's geotechnical report (Geosphere Consultants 2008) concluded that soils on and near the Dry Lake could be expansive. However, no facility structures would be located on these soils under the Proposed Action. Therefore, impacts associated with expansive soils would be less than significant. Further geotechnical studies and implementation of appropriate project design, as required by mitigation measure MM-PH&S-1, would further reduce the potential for impacts under significance criterion SR-4 to a less-than-significant level.

SR-5

Construction

A temporary septic system and leach field with a capacity of no more than 3,000 gallons per day would be installed near the temporary construction trailers, in order to support construction workers. The septic system would be permitted through San Bernardino County and would include features to avoid any impacts to the South Ivanpah Groundwater Basin. These features may include locating the system away from surface water drainage features, scour protection over the absorption field, monitoring wells to inspect against clogging in the absorption field, large absorption area to maximize the area of biological treatment, and/or regular maintenance by a licensed waste management contractor. Impacts would be less than significant.

Operation and Maintenance

A septic and leach field system with a capacity of no more than a few hundred gallons per day would be installed at the O&M building to support operations workers. The septic system would be permitted through San Bernardino County and would include features to avoid any impacts to the South Ivanpah Groundwater Basin. These features may include locating the system away from surface water drainage features, scour protection over the absorption field, monitoring wells to inspect against clogging in the absorption field, large absorption area to maximize the area of biological treatment, and/or regular maintenance by a licensed waste management contractor. Impacts would be less than significant.

Decommissioning

It is expected that the O&M Building, with its septic and leach field system, would remain operational until near the end of the decommissioning period. Following removal of that system, the Applicant would likely contract temporary sanitary facilities for the remainder of the period. Impacts would be less than significant.

4.14.4 Alternative 2: 2,385 Ac Alternative

4.14.4.1 Direct and Indirect Impacts

Alternative 2 would include implementation of a portion of the solar farm in a separate area to the south of the Primm Valley Golf Course. Based on a review of the soils and geologic setting of this additional area, the type of soil resource impacts there is expected to be the same as that for the area of the Proposed Action. However, a substantial difference between Alternative 2 and the Proposed Action with respect to soil resources is the proximity of Alternative 2 to the Ivanpah Dry Lake. As shown in Figure 3.14-1, the facility would be directly adjacent to the Dry Lake under Alternative 2 and approximately 750 feet away under the Proposed Action. This

difference in location could result in a difference in soil resource impacts if the characteristics of the soil adjacent to the Dry Lake bed are substantially different than the characteristics of the soil on the alluvial fan. The potential impacts associated with these differences are evaluated in the discussion below.

Construction

Construction activities that would affect soil resources include excavation, grading, and soil compaction to prepare the site for installation of project components. These activities would be the same under Alternative 2 as under the Proposed Action, except they would occur over an area of 2,385 acres, and would therefore impact a larger area than the Proposed Action.

Soil Erosion and Loss of Topsoil

The project activities that could create the potential for erosion, including removal of soil stabilizing vegetation and modification of stormwater velocity, would be the same for Alternative 2 as for the Proposed Action. However, due to the closer proximity to the Dry Lake, the potential for soil erosion associated with Alternative 2 may be different than the Proposed Action. The Dry Lake bed soils are much finer in grain size than the alluvial fan soils, and therefore could be expected to be more susceptible to water and wind erosion. However, with respect to water erosion, the Dry Lake bed is also of a flatter grade than the alluvial fan. As a result, stormwater flow velocities would be lower in this area, balancing out the finer grain size. Also, as discussed above, even with their larger grain size, the alluvial fan soils are still expected to be highly susceptible to water erosion if soil stabilizing features such as vegetation and soil crusts are removed. Therefore, the differences in soil type between Alternative 2 and the Proposed Action are not expected to create a difference in soil erosion impacts.

The Applicant-proposed minimization measures, regulatory requirements, and mitigation measures that apply to the Proposed Action would also apply to Alternative 2. Alternative 2 would include avoidance of drainage channels, implementation of upstream debris basins to reduce stormwater flow velocities across the site, site grading to promote sheet flow, implementation of downstream sediment basins to capture increased sediment loads, and use of silt fence and fiber rolls for erosion protection. The Applicant would construct and manage the basins in accordance with specifications in their Storm Water Management Plan (First Solar 2012k). The use of the basins, as well as the silt fence and fiber rolls, would be governed by the Applicant's Construction SWPPP, which they would be required to obtain under the Clean Water Act. In addition, a variety of mitigation measures (MM-Water-7, MM-Water-8, MM-Veg-5, and MM-Air-1) would require the implementation of flood protection, soil stabilization, and revegetation efforts, each of which would further protect site soils during construction. Therefore, impacts due to soil erosion and loss of topsoil would be avoided or substantially reduced and adverse impacts would not result due to Alternative 2.

Unstable Geologic Units

The Applicant's geotechnical report (Geosphere Consultants 2008) identified differences between the alluvial fan soils and Dry Lake soils that may affect structural stability of the facility under Alternative 2.

The limited laboratory testing conducted as part of the geotechnical analysis indicates that the near surface soils at the Stateline Solar Farm site may be sensitive to liquefaction when saturated with water (Geosphere Consultants 2008). However, as discussed for the Proposed Action, the soils would have to be saturated to be subjected to liquefaction. In general, the large depth to groundwater at both the Proposed Action and Alternative 2 project locations (more than

200 feet deep) implies that there is a low potential for liquefaction and lateral spreading at either location. However, the proximity of the proposed facility in Alternative 2 to the Ivanpah Dry Lake (directly adjacent) could have an effect on the potential for soil saturation. During certain times of the year, following heavy rainfall, the Ivanpah Dry Lake does capture standing water that can take weeks or months to evaporate or infiltrate. Although the facility in Alternative 2 would be located outside of the 100-year floodplain for the Dry Lake, and would therefore not be subjected to standing water, it would be located within less than 50 feet (laterally) and at almost the exact same elevation as the saturated soils on the Dry Lake bed. By being located very close to the Dry Lake bed soils, facility structures under Alternative 2 could be subjected to liquefaction or lateral spreading.

The Applicant's geotechnical report also reported that local subsidence, in the form of sinkholes, has been observed along the northern edge of Ivanpah Dry Lake near the solar farm project site. Again, the closer proximity of the Alternative 2 site configuration to the Dry Lake bed implies that Alternative 2 would have a higher risk of encountering these subsidence features than the Proposed Action.

The Applicant's geotechnical report also concluded that the soils on the Dry Lake bed have a moderate to high expansion potential, but that the soils outside of the Dry Lake bed have a low expansion potential. The report recommended that any structures placed on the lake bed be designed and constructed to account for the potential for soil expansion. Again, this recommendation may be more applicable to the facility under Alternative 2 than the Proposed Action.

Like the Proposed Action, occupied structures under Alternative 2 would be limited to a few construction trailers and a small O&M Building that would be occupied by fewer than 10 workers. Alternative 2 would not include any tall structures that could catastrophically fall due to soil instability. There are no nearby residents or other occupied structures that could be affected if a structure within the project boundary should fail. Therefore, the impacts associated with any potential instability under Alternative 2 would be minimal.

As for the Proposed Action, mitigation measure MM-PH&S-1 would address potential impacts related to liquefaction, dynamic compaction, subsidence, and expansive soils. Mitigation measure MM-PH&S-1 requires that design-level geotechnical studies to be performed by the Applicant shall include detailed characterization of subsurface conditions, including:

- Identification of any potentially detrimental chemicals or soil features;
- Excavation of potentially expansive of collapsible soils during construction and replacement with engineered backfill;
- Ground-treatment processes; and
- Redirection of surface water and drainage away from expansive soils.

If the design-level studies were to verify the presence of the potentially higher instability hazards at the Alternative 2 site location, detailed facility design of the facilities under Alternative 2 would avoid or minimize any potential impacts.

Soil Chemistry

Similar to the discussion above regarding the difference in soil characteristics between the Proposed Action and Alternative 2 site location, there are also differences in soil chemistry that may result in adverse impacts under Alternative 2. The Applicant's geotechnical report recommended that, because of the high concentration of water-soluble sulfates in the lakebed soils, concrete used in these areas be protected in accordance with ACI publication 318 (Geosphere Consultants 2008). Again, if the design-level studies were to verify the presence of

the potentially higher soil chemistry hazards at the Alternative 2 site location, detailed design of the facilities under Alternative 2 would avoid or minimize any potential impacts.

Operation and Maintenance

All of the potential impacts discussed above for construction of Alternative 2 would also apply to operation and maintenance of Alternative 2. Except for minor grading and gravel application to maintain access roads, no additional project activities would occur that could potentially result in soil erosion, damage due to unstable soils, or damage due to soil chemistry. Re-grading and re-graveling of access roads for routine maintenance would not alter the drainage patterns on-site, and would not lead to a substantial increase in erosion or loss of topsoil. It is anticipated that any increase in surface water runoff resulting from *long-term* project features would be location-specific, and that such effects would not influence surface runoff in a manner which would result in erosion or loss of topsoil.

Like the Proposed Action, the infrastructure existing on the project site would continue to be potentially affected by stormwater erosion and sedimentation, soil instability, or soil chemistry throughout the operational period of Alternative 2. As discussed for construction above, these hazards may be greater under Alternative 2 than under the Proposed Action due to the different soil characteristics near the Dry Lake bed. Therefore, continuing use of Best Management Practices and inspection and monitoring programs would be required throughout the operational period to verify that constructed features, including stormwater management systems, compacted soil surface, roads, and vegetated areas continue to function as specified in the Applicant's management plans, permits, and BLM-specified mitigation measures. Mitigation measure MM-Water-9 would require that the stormwater management systems be operated, maintained, and monitored in accordance with the Applicant's Storm Water Management Plan (First Solar 2012k), and that response actions be taken to address any identified erosion, sedimentation, or stormwater damage issues.

Decommissioning

Decommissioning of the Stateline Solar Farm site under Alternative 2 would be done in accordance with the Applicant's preliminary Closure, Decommissioning, and Reclamation Plan (First Solar 2012d), required as part of mitigation measure MM-Lands-2. The activities that would take place during the decommissioning process, including removal of site structures, grading, and revegetation, would be the same under Alternative 2 as with the Proposed Action, and therefore the potential impacts would be the same.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of Alternative 2 would not have any effect on soil resources. By placing limitations on future land uses that cause surface disturbance within the newly added *23,121* acre area, this action would provide a beneficial impact in reducing the potential for the disturbance of existing soil resources.

4.14.4.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) are presented below based on the CEQA Significance Criteria. Only those significance criteria which were determined to be relevant to the project are addressed below:

SR-1

Construction, Operations and Maintenance, and Decommissioning

The project site under Alternative 2 is not located close enough to any of the surrounding hillside mountains to be affected by either a debris flow or a landslide. No impact would occur under project construction, operations and maintenance, or decommissioning.

SR-2

Construction

Similar to the Proposed Action, modification of erosion-potential characteristics during construction of Alternative 2 could occur from removal of soil-stabilizing vegetation, or from an increase in stormwater flow velocity through a reduction in infiltration rate or modification of flow paths. Removal of stabilizing materials and modification of flow paths would likely lead to an increase in soil erosion off of the site, and an increase in sedimentation in downstream areas. In the absence of protective measures, project infrastructure would be subject to potential damage from flash flooding on the alluvial fan. Without implementation of mitigation measures, potential soil erosion impacts would be significant.

The measures proposed by the Applicant in their Plan of Development (First Solar 2011) and Storm Water Management Plan (First Solar 2012k) would be implemented under Alternative 2. These measures would also be required and regulated under a Construction SWPPP, which the Applicant would be required to obtain under the Clean Water Act. In addition, a variety of mitigation measures (MM-Water-7, MM-Water-8, MM-Veg-5, and MM-Air-1) would require the implementation of flood protection, soil stabilization, and revegetation efforts, each of which would further protect site soils during construction of Alternative 2. The potential for construction of Alternative 2 to cause erosion or loss of topsoil would be minimized by these BMPs, regulatory requirements, and mitigation measures. Potential impacts under significance criterion SR-2 would be less than significant after implementation of mitigation measures.

Operation and Maintenance

Like construction, the operation and maintenance of Alternative 2 could result in increased soil erosion if stormwater management systems are not maintained and operated as specified in the Applicant's Storm Water Management Plan and the mitigation measures. Without implementation of mitigation measures, potential soil erosion impacts would be significant. Therefore, mitigation measures MM-Water-7, MM-Water-9, and MM-Veg-5 would require the implementation of flood protection, stormwater management, soil stabilization, and revegetation efforts, each of which would further protect site soils during operation of Alternative 2. Potential impacts under significance criterion SR-2 would be less than significant after implementation of mitigation measures.

Decommissioning

Earth-disturbing activities during decommissioning of Alternative 2 would be similar to those required during construction, including excavation and grading. These activities could potentially increase the risk of soil erosion due to removal of stabilizing features such as structures, vegetation, soil crusts, and roads. Although protective measures such as stormwater management systems and BMPs (silt fences and fiber rolls) would protect site soils from erosion during construction, these features would be removed during decommissioning, and would not be present to protect site soils during most of the decommissioning period. Instead, protection of site soils during decommissioning would be dependent on re-

establishment of original site drainage, vegetation, and soil crusts. In desert environments, these processes can take substantial lengths of time, so impacts could occur for the long-term during decommissioning. Without implementation of mitigation measures, potential soil erosion impacts under Alternative 2 would be significant.

Alternative 2 would include implementation of decommissioning in accordance with the Applicant's preliminary Closure, Decommissioning, and Reclamation Plan (First Solar 2012d), as required by mitigation measure MM-Lands-2. This mitigation measure would facilitate site revegetation as rapidly as possible. Potential impacts under criterion SR-2 would be less than significant with the implementation of this mitigation measure.

SR-3

Construction, Operations and Maintenance, and Decommissioning

Impacts due to placement of the facility directly on unstable soils under Alternative 2 could occur due to liquefaction, lateral spreading, dynamic compaction or hydrocompaction, or subsidence. As discussed for construction, the potential for these impacts may be greater under Alternative 2 than under the Proposed Action due to the different soil characteristics near the Dry Lake bed. Potential adverse impacts associated with these processes could include destabilization of project infrastructure, resulting in stability hazards to infrastructure in the immediate vicinity. The potential for these impacts, and the consequences of the impact, would be the same for project construction, operations and maintenance, and decommissioning.

Although the site's geologic setting and soil characteristics could result in the presence of unstable units, any potential impacts resulting from these unstable units would be minimal. Occupied structures on the facility would be limited to a few construction trailers and, ultimately, a small O&M Building that would be occupied by fewer than 10 workers. The proposed facility under Alternative 2 would not include any tall structures that could catastrophically fall due to soil instability. There are no nearby residents or other occupied structures that could be affected if a structure within the project boundary should fail. Therefore, the impacts associated with any potential instability would be less than significant. Further geotechnical studies and implementation of appropriate project design, as required by mitigation measures MM-PH&S-1, would further reduce the potential for impacts under significance criterion SR-3 to a less-than-significant level.

SR-4

Construction, Operations and Maintenance, and Decommissioning

Impacts due to placement of the facility directly on unstable soils under Alternative 2 could occur due to expansive soils. The Applicant's geotechnical report (Geosphere Consultants 2008) concluded that soils on and near the Dry Lake could be expansive. Further geotechnical studies and implementation of appropriate project design, as required by mitigation measure MM-PH&S-1, would further reduce the potential for impacts under significance criterion SR-4 to a less-than-significant level.

SR-5

Construction

Under Alternative 2, a temporary septic system and leach field with a capacity of no more than 3,000 gallons per day would be installed near the temporary construction trailers, in order to support construction workers. The septic system would be permitted through San Bernardino

County and would include features to avoid any impacts to the South Ivanpah Groundwater Basin. These features may include locating the system away from surface water drainage features, scour protection over the absorption field, monitoring wells to inspect against clogging in the absorption field, large absorption area to maximize the area of biological treatment, and/or regular maintenance by a licensed waste management contractor. Impacts would be less than significant.

Operation and Maintenance

Under Alternative 2, a *long-term* septic and leach field system with a capacity of no more than a few hundred gallons per day would be installed at the O&M building to support operations workers. The septic system would be permitted through San Bernardino County and would include features to avoid any impacts to the South Ivanpah Groundwater Basin. These features may include locating the system away from surface water drainage features, scour protection over the absorption field, monitoring wells to inspect against clogging in the absorption field, large absorption area to maximize the area of biological treatment, and/or regular maintenance by a licensed waste management contractor. Impacts would be less than significant.

Decommissioning

It is expected that the O&M Building, with its septic and leach field system, would remain operational until near the end of the decommissioning period of Alternative 2. Following removal of that system, the Applicant would likely contract temporary sanitary facilities for the remainder of the period. Impacts would be less than significant.

4.14.5 *Revised* Alternative 3: *1,685* Ac Alternative

4.14.5.1 Direct and Indirect Impacts

Revised Alternative 3 is conceptually similar to the Proposed Action (Alternative 1), but would be placed within a different land area which comprises *1,685* acres. The land area associated with *Revised* Alternative 3 would partially overlap with the land area associated with the Proposed Action, but would be shifted towards the south and east.

Similar to Alternative 2, a substantial difference between *Revised* Alternative 3 and the Proposed Action with respect to soil resources is the proximity of *Revised* Alternative 3 to the Ivanpah Dry Lake. As shown in Figure 3.14-1, the facility would be directly adjacent to the Dry Lake under *Revised* Alternative 3 and approximately 750 feet away under the Proposed Action. The relationship of the facility to the Dry Lake under *Revised* Alternative 3 would be similar to that of Alternative 2. Therefore, the construction, operations and maintenance, and decommissioning impacts discussed for this area for Alternative 2, including impacts associated with soil erosion and loss of topsoil, unstable geologic units, and soil chemistry, would also apply to *Revised* Alternative 3.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of *Revised* Alternative 3 would not have any effect on soil resources. By placing limitations on future land uses that cause surface disturbance within the newly added *23,821* acre area, this action would provide a beneficial impact in reducing the potential for the disturbance of existing soil resources.

4.14.5.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) are presented below based on the CEQA Significance Criteria. Only those significance criteria which were determined to be relevant to the project are addressed below:

SR-1

Construction, Operations and Maintenance, and Decommissioning

The project site under *Revised* Alternative 3 is not located close enough to any of the surrounding hillside mountains to be affected by either a debris flow or a landslide. No impact would occur under project construction, operations and maintenance, or decommissioning.

SR-2

Construction

Similar to the Proposed Action, modification of erosion-potential characteristics during construction of *Revised* Alternative 3 could occur from removal of soil-stabilizing vegetation, or from an increase in stormwater flow velocity through a reduction in infiltration rate or modification of flow paths. Removal of stabilizing materials and modification of flow paths would likely lead to an increase in soil erosion off of the site, and an increase in sedimentation in downstream areas. In the absence of protective measures, project infrastructure would be subject to potential damage from flash flooding on the alluvial fan. Without implementation of mitigation measures, potential soil erosion impacts would be significant.

The measures proposed by the Applicant in their Plan of Development (First Solar 2011) and Storm Water Management Plan (First Solar 2012k) would be implemented under *Revised* Alternative 3. These measures would also be required and regulated under a Construction SWPPP, which the Applicant would be required to obtain under the Clean Water Act. In addition, a variety of mitigation measures (MM-Water-7, MM-Water-8, MM-Veg-5, and MM-Air-1) would require the implementation of flood protection, soil stabilization, and revegetation efforts, each of which would further protect site soils during construction of *Revised* Alternative 3. The potential for construction of *Revised* Alternative 3 to cause erosion or loss of topsoil would be minimized by these BMPs, regulatory requirements, and mitigation measures. Potential impacts under significance criterion SR-2 would be less than significant after implementation of mitigation measures.

Operation and Maintenance

Like construction, the operation and maintenance of *Revised* Alternative 3 could result in increased soil erosion if stormwater management systems are not maintained and operated as specified in the Applicant's Storm Water Management Plan and the mitigation measures. Without implementation of mitigation measures, potential soil erosion impacts would be significant. Therefore, mitigation measures MM-Water-7, MM-Water-9, and MM-Veg-5 would require the implementation of flood protection, stormwater management, soil stabilization, and revegetation efforts, each of which would further protect site soils during operation of *Revised* Alternative 3. Potential impacts under significance criterion SR-2 would be less than significant after implementation of mitigation measures.

Decommissioning

Earth-disturbing activities during decommissioning of *Revised* Alternative 3 would be similar to those required during construction, including excavation and grading. These activities could potentially increase the risk of soil erosion due to removal of stabilizing features such as structures, vegetation, soil crusts, and roads. Although protective measures such as stormwater management systems and BMPs (silt fences and fiber rolls) would protect site soils from erosion during construction, these features would be removed during decommissioning, and would not be present to protect site soils during most of the decommissioning period. Instead, protection of site soils during decommissioning would be dependent on re-establishment of original site drainage, vegetation, and soil crusts. In desert environments, these processes can take substantial lengths of time, so impacts could occur for the long-term during decommissioning. Without implementation of mitigation measures, potential soil erosion impacts under *Revised* Alternative 3 would be significant.

Revised Alternative 3 would include implementation of decommissioning in accordance with the Applicant's preliminary Closure, Decommissioning, and Reclamation Plan (First Solar 2012d), as required by mitigation measure MM-Lands-2. This mitigation measure would facilitate site revegetation as rapidly as possible. Potential impacts under criterion SR-2 would be less than significant with the implementation of this mitigation measure.

SR-3

Construction, Operations and Maintenance, and Decommissioning

Impacts due to placement of the facility directly on unstable soils under *Revised* Alternative 3 could occur due to liquefaction, lateral spreading, dynamic compaction or hydrocompaction, or subsidence. As discussed for construction, the potential for these impacts may be greater under *Revised* Alternative 3 than under the Proposed Action due to the different soil characteristics near the Dry Lake bed. Potential adverse impacts associated with these processes could include destabilization of project infrastructure, resulting in stability hazards to infrastructure in the immediate vicinity. The potential for these impacts, and the consequences of the impact, would be the same for project construction, operations and maintenance, and decommissioning.

Although the site's geologic setting and soil characteristics could result in the presence of unstable units, any potential impacts resulting from these unstable units would be minimal. Occupied structures on the facility would be limited to a few construction trailers and, ultimately, a small O&M Building that would be occupied by fewer than 10 workers. The proposed facility under *Revised* Alternative 3 would not include any tall structures that could catastrophically fall due to soil instability. There are no nearby residents or other occupied structures that could be affected if a structure within the project boundary should fail. Therefore, the impacts associated with any potential instability would be less than significant. Further geotechnical studies and implementation of appropriate project design, as required by mitigation measures MM-PH&S-1, would further reduce the potential for impacts under significance criterion SR-3 to a less-than-significant level.

SR-4

Construction, Operations and Maintenance, and Decommissioning

Impacts due to placement of the facility directly on unstable soils under *Revised* Alternative 3 could occur due to expansive soils. The Applicant's geotechnical report (Geosphere Consultants 2008) concluded that soils on and near the Dry Lake could be expansive. Further geotechnical studies and implementation of appropriate project design, as required by mitigation

measure MM-PH&S-1, would further reduce the potential for impacts under significance criterion SR-4 to a less-than-significant level.

SR-5

Construction

Under *Revised* Alternative 3, a temporary septic system and leach field with a capacity of no more than 3,000 gallons per day would be installed near the temporary construction trailers, in order to support construction workers. The septic system would be permitted through San Bernardino County and would include features to avoid any impacts to the South Ivanpah Groundwater Basin. These features may include locating the system away from surface water drainage features, scour protection over the absorption field, monitoring wells to inspect against clogging in the absorption field, large absorption area to maximize the area of biological treatment, and/or regular maintenance by a licensed waste management contractor. Impacts would be less than significant.

Operation and Maintenance

Under *Revised* Alternative 3, a *long-term* septic and leach field system with a capacity of no more than a few hundred gallons per day would be installed at the O&M building to support operations workers. The septic system would be permitted through San Bernardino County and would include features to avoid any impacts to the South Ivanpah Groundwater Basin. These features may include locating the system away from surface water drainage features, scour protection over the absorption field, monitoring wells to inspect against clogging in the absorption field, large absorption area to maximize the area of biological treatment, and/or regular maintenance by a licensed waste management contractor. Impacts would be less than significant.

Decommissioning

It is expected that the O&M Building, with its septic and leach field system, would remain operational until near the end of the decommissioning period of *Revised* Alternative 3. Following removal of that system, the Applicant would likely contract temporary sanitary facilities for the remainder of the period. Impacts would be less than significant.

4.14.6 Alternative 4: Reduced Acreage Alternative

4.14.6.1 Direct and Indirect Impacts

Alternative 4 is conceptually similar to the Proposed Action (Alternative 1), but would be placed within a different land area which comprises 1,766 acres. The land area associated with Alternative 4 would be the same as the northern portion of the bifurcated footprint of Alternative 2. This northern portion is the part of the Alternative 2 layout that is located adjacent to the Ivanpah Dry Lake bed. The facility under Alternative 4 would be directly adjacent to the Dry Lake, as opposed to being approximately 750 feet away under the Proposed Action. The relationship of the facility to the Dry Lake under Alternative 4 would be similar to that of Alternative 2. Therefore, the construction, operations and maintenance, and decommissioning impacts discussed for this area for Alternative 2, including impacts associated with soil erosion and loss of topsoil, unstable geologic units, and soil chemistry, would also apply to Alternative 4.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of Alternative 4 would not have any effect on soil resources. By placing limitations on future land uses that cause surface disturbance within the newly added *23,740* acre area, this action would provide a beneficial impact in reducing the potential for the disturbance of existing soil resources.

4.14.6.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) are presented below based on the CEQA Significance Criteria. Only those significance criteria which were determined to be relevant to the project are addressed below:

SR-1

Construction, Operations and Maintenance, and Decommissioning

The project site under Alternative 4 is not located close enough to any of the surrounding hillside mountains to be affected by either a debris flow or a landslide. No impact would occur under project construction, operations and maintenance, or decommissioning. In addition, Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

SR-2

Construction

Similar to the Proposed Action, modification of erosion-potential characteristics during construction of Alternative 4 could occur from removal of soil-stabilizing vegetation, or from an increase in stormwater flow velocity through a reduction in infiltration rate or modification of flow paths. Removal of stabilizing materials and modification of flow paths would likely lead to an increase in soil erosion off of the site, and an increase in sedimentation in downstream areas. In the absence of protective measures, project infrastructure would be subject to potential damage from flash flooding on the alluvial fan. Without implementation of mitigation measures, potential soil erosion impacts would be significant.

The measures proposed by the Applicant in their Plan of Development (First Solar 2011) and Storm Water Management Plan (First Solar 2012k) would be implemented under Alternative 4. These measures would also be required and regulated under a Construction SWPPP, which the Applicant would be required to obtain under the Clean Water Act. In addition, a variety of mitigation measures (MM-Water-7, MM-Water-8, MM-Veg-5, and MM-Air-1) would require the implementation of flood protection, soil stabilization, and revegetation efforts, each of which would further protect site soils during construction of Alternative 4. The potential for construction of Alternative 4 to cause erosion or loss of topsoil would be minimized by these BMPs, regulatory requirements, and mitigation measures. Potential impacts under significance criterion SR-2 would be less than significant after implementation of mitigation measures. In addition, Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

Operation and Maintenance

Like construction, the operation and maintenance of Alternative 4 could result in increased soil erosion if stormwater management systems are not maintained and operated as specified in the

Applicant's Storm Water Management Plan and the mitigation measures. Without implementation of mitigation measures, potential soil erosion impacts would be significant. Therefore, mitigation measures MM-Water-7, MM-Water-9, and MM-Veg-5 would require the implementation of flood protection, stormwater management, soil stabilization, and revegetation efforts, each of which would further protect site soils during operation of Alternative 4. Potential impacts under significance criterion SR-2 would be less than significant after implementation of mitigation measures. In addition, Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

Decommissioning

Earth-disturbing activities during decommissioning of Alternative 4 would be similar to those required during construction, including excavation and grading. These activities could potentially increase the risk of soil erosion due to removal of stabilizing features such as structures, vegetation, soil crusts, and roads. Although protective measures such as stormwater management systems and BMPs (silt fences and fiber rolls) would protect site soils from erosion during construction, these features would be removed during decommissioning, and would not be present to protect site soils during most of the decommissioning period. Instead, protection of site soils during decommissioning would be dependent on re-establishment of original site drainage, vegetation, and soil crusts. In desert environments, these processes can take substantial lengths of time, so impacts could occur for the long-term during decommissioning. Without implementation of mitigation measures, potential soil erosion impacts under Alternative 4 would be significant.

Alternative 4 would include implementation of decommissioning in accordance with the Applicant's preliminary Closure, Decommissioning, and Reclamation Plan (First Solar 2012d), as required by mitigation measure MM-Lands-2. This mitigation measure would facilitate site revegetation as rapidly as possible. Potential impacts under criterion SR-2 would be less than significant with the implementation of this mitigation measure. In addition, Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

SR-3

Construction, Operations and Maintenance, and Decommissioning

Impacts due to placement of the facility directly on unstable soils under Alternative 4 could occur due to liquefaction, lateral spreading, dynamic compaction or hydrocompaction, or subsidence. As discussed for construction, the potential for these impacts may be greater under Alternative 4 than under the Proposed Action due to the different soil characteristics near the Dry Lake bed. Potential adverse impacts associated with these processes could include destabilization of project infrastructure, resulting in stability hazards to infrastructure in the immediate vicinity. The potential for these impacts, and the consequences of the impact, would be the same for project construction, operations and maintenance, and decommissioning.

Although the site's geologic setting and soil characteristics could result in the presence of unstable units, any potential impacts resulting from these unstable units would be minimal. Occupied structures on the facility would be limited to a few construction trailers and, ultimately, a small O&M Building that would be occupied by fewer than 10 workers. The proposed facility under Alternative 4 would not include any tall structures that could catastrophically fall due to soil instability. There are no nearby residents or other occupied structures that could be affected if a structure within the project boundary should fail. Therefore, the impacts associated with any potential instability would be less than significant. Further geotechnical studies and implementation of appropriate project design, as required by mitigation measures MM-PH&S-1,

would further reduce the potential for impacts under significance criterion SR-3 to a less-than-significant level. In addition, Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

SR-4

Construction, Operations and Maintenance, and Decommissioning

Impacts due to placement of the facility directly on unstable soils under Alternative 4 could occur due to expansive soils. The Applicant's geotechnical report (Geosphere Consultants 2008) concluded that soils on and near the Dry Lake could be expansive. Further geotechnical studies and implementation of appropriate project design, as required by mitigation measure MM-PH&S-1, would further reduce the potential for impacts under significance criterion SR-4 to a less-than-significant level. In addition, Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

SR-5

Construction

Under Alternative 4, a temporary septic system and leach field with a capacity of no more than 3,000 gallons per day would be installed near the temporary construction trailers, in order to support construction workers. The septic system would be permitted through San Bernardino County and would include features to avoid any impacts to the South Ivanpah Groundwater Basin. These features may include locating the system away from surface water drainage features, scour protection over the absorption field, monitoring wells to inspect against clogging in the absorption field, large absorption area to maximize the area of biological treatment, and/or regular maintenance by a licensed waste management contractor. Impacts would be less than significant. In addition, Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

Operation and Maintenance

Under Alternative 4, a *long-term* septic and leach field system with a capacity of no more than a few hundred gallons per day would be installed at the O&M building to support operations workers. The septic system would be permitted through San Bernardino County and would include features to avoid any impacts to the South Ivanpah Groundwater Basin. These features may include locating the system away from surface water drainage features, scour protection over the absorption field, monitoring wells to inspect against clogging in the absorption field, large absorption area to maximize the area of biological treatment, and/or regular maintenance by a licensed waste management contractor. Impacts would be less than significant. In addition, Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

Decommissioning

It is expected that the O&M Building, with its septic and leach field system, would remain operational until near the end of the decommissioning period of Alternative 4. Following removal of that system, the Applicant would likely contract temporary sanitary facilities for the remainder of the period. Impacts would be less than significant. In addition, Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

4.14.7 Alternative 5: No Action Alternative

4.14.7.1 Direct and Indirect Impacts

Under Alternative 5, the Proposed Action would not be approved and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Therefore, the impacts of the Proposed Action would not occur. However, the land on which the project is proposed would become available to other uses that are consistent with BLM's CDCA plan, including another renewable energy project.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 5. Land uses associated with the Ivanpah DWMA would continue as they are today. Because the boundary of the DWMA would not be modified, the associated land area of more than 23,000 acres would be available to other land uses, as are acceptable in the CDCA Plan. Therefore, the No Action Alternative would not have the potential beneficial impact to soil resources associated with limiting future land uses in that area associated with the amendments to the boundaries of the existing Ivanpah DWMA.

Overall, the No Action Alternative would not have any adverse impact on soil resources, but it also would not have any of the beneficial impacts associated with limiting future land uses.

4.14.7.2 CEQA Significance Determinations

No impacts would occur to soil resources under Alternative 5.

4.14.8 Alternative 6: No Project, Exclude Solar Alternative

4.14.8.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. As a result, no solar energy project would be constructed on the site, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. It is expected that the site would remain in its existing condition unless another use is designated in this amendment. As a result, no ground disturbing activities would occur, and there would therefore be no potential for impacts to soil resources.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of Alternative 6 would not have any effect on soil resources. By placing limitations on future land uses that cause surface disturbance within the newly added 25,506 acre area, this action would provide a beneficial impact in reducing the potential for the disturbance of existing soil resources.

4.14.8.2 CEQA Significance Determinations

No impacts would occur to soil resources under Alternative 6.

4.14.9 Alternative 7: No Project, Approve Solar Alternative

4.14.9.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The Stateline Solar Farm Project would not be constructed on the project site and the project site would remain vacant in the near-term. Under this alternative, the BLM would not approve the proposed facility, but would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the site.

If this were to occur, it is likely that construction, operation, and decommissioning impacts to soil resources would be similar to the impacts described for Alternative 1. Specific impacts could depend on the siting of the future facility with respect to the Dry Lake bed, and would need to be assessed in a project-specific environmental evaluation.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 7. Land uses associated with the Ivanpah DWMA would continue as they are today. If a solar or other renewable energy facility is proposed on the site in the future, the impact on soil resources would be considered in a project-specific environmental analysis that would occur at that time.

4.14.9.2 CEQA Significance Determinations

There would be no impacts to soil resources under Alternative 7.

4.14.10 Cumulative Impacts

4.14.10.1 Geographic Extent/Context

The geographic extent for analysis of cumulative impacts related to soil resources is the project site itself. Any potential impacts to soil resources related to construction, operation and maintenance, and decommissioning of the proposed Stateline facility would be site-specific and would only occur within the proposed project boundary; off-site soil resources would not be affected.

4.14.10.2 Existing Cumulative Conditions

Past and current activities that have affected soil resources within the Project Study Area include dirt roads (BLM-designated open routes), the Primm Resorts groundwater production wells and pipeline, transmission lines, and grazing.

4.14.10.3 Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects, various BLM authorized actions/activities, proposed or approved projects within the County's jurisdiction, and other actions/activities that the agencies consider reasonably foreseeable. Table 4.1-2 summarizes the cumulative projects that would have the potential to combine with the Proposed Action and result in cumulative impacts to geological resources. Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA, or will do so prior to approval. Even if

environmental review has not been completed for the cumulative projects described in Table 4.1-2, their effects were considered in the cumulative impacts analysis in the *PA and* EIS/EIR.

The only reasonably foreseeable project within the Project Study Area is the EITP.

4.14.10.4 Cumulative Impacts Associated with Proposed Action

Construction

The past and current activities in the Project Study Area have resulted in compaction of soil, modification of drainage pathways, and removal of vegetation and soil crusts. Compaction of soil and modification of drainage pathways has likely modified soil infiltration rates in limited areas (on and near dirt roads), leading to localized erosion. Erosion rates may also have increased in limited areas due to removal of vegetation and soil crusts.

Construction of the proposed Stateline facility would eliminate any past or current soil impacts associated with the past and current projects. Project construction would include vegetation removal, grading, and excavation throughout the 2,143 acre Proposed Action area. These activities would erase any trace of previous soil compaction, drainage modification, or removal of vegetation. Although adverse soil impacts could occur and would be mitigated, as discussed in Section 4.14.3.1, these impacts would not combine with the impacts from the past and current projects. Instead, any impacts from the past and current projects would cease to exist, and the soil resources within the project area would be entirely modified by the new project.

Construction of EITP *was recently completed, and is* expected to have *had* a similar impact in a limited area within the Project Study Area, but not within the proposed facility itself. The width of the construction zone for EITP *was* approximately 130 feet, and the ROW passes through the Stateline Project Study Area for a distance of 2 miles, resulting in 31 acres of soil disturbance within the Project Study Area. Although this disturbance would be in close proximity to the proposed Stateline facilities, the two projects would not overlap, except for the need to construct the Stateline facility access road across the EITP ROW.

Operation and Maintenance

Once construction has been completed, any soil compaction, modification of drainages, or affects from removal of vegetation or soil crusts from previous projects would cease to exist. Also, the only future project in the area, EITP, would not occur within the footprint of the proposed Stateline facility. Therefore, any impacts associated with soil resources in the geographic area of interest would be those associated with the Stateline project itself. No other projects would contribute to cumulative impacts to soil resources within the project area.

Decommissioning

Similar to operations, no other projects would contribute to cumulative impacts to soil resources within the project area during the lifetime of the project.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the Ivanpah DWMA as part of the Proposed Action would not be anticipated to have adverse impacts on soil resources. Past and current projects within the newly added *23,363* acre area, including transmission lines, pipelines, grazing, and dirt roads, have likely resulted in localized soil compaction, modification of drainages, and removal of vegetation. The soil resource impacts associated with these activities would continue. However, because future land uses would be limited in the DWMA, no additional projects that

could impact soil resources on a large scale would be implemented. By placing limitations on future land uses that cause surface disturbance within the newly added *23,363* acre area, this action would contribute to a cumulative beneficial impact in reducing the potential for the disturbance of existing soil resources by other projects in the future. As a result, this action would have a beneficial impact on soil resources within the newly protected area.

4.14.10.5 CEQA Significance Determinations

As discussed above, construction, operation, and decommissioning of the proposed facility would not combine with the effects of any other past, present, or reasonably foreseeable projects. Impacts of the project itself could be significant, and would be reduced through mitigation to less-than-significant levels. However, the project would not combine with other projects to result in a cumulative impact. No cumulative impact would occur.

4.14.10.6 Alternatives

Alternative 2: 2,385 Ac Alternative

Similar to the Proposed Action, Alternative 2 would not combine with any past, present, or reasonably foreseeable projects to create cumulative soil resources impacts. Impacts associated with Alternative 2 itself could occur, and these would be addressed by implementation of the Applicant's Storm Water Management Plan, regulatory requirements, and mitigation measures. However, the project would not combine with other projects to contribute to any cumulative impacts.

***Revised* Alternative 3: *1,685* Ac Alternative**

Similar to the Proposed Action, *Revised* Alternative 3 would not combine with any past, present, or reasonably foreseeable projects to create cumulative soil resources impacts. Impacts associated with *Revised* Alternative 3 itself could occur, and these would be addressed by implementation of the Applicant's Storm Water Management Plan, regulatory requirements, and mitigation measures. However, the project would not combine with other projects to contribute to any cumulative impacts.

Alternative 4: Reduced Acreage Alternative

Similar to the Proposed Action, Alternative 4 would not combine with any past, present, or reasonably foreseeable projects to create cumulative soil resources impacts. Impacts associated with Alternative 4 itself could occur, and these would be addressed by implementation of the Applicant's Storm Water Management Plan, regulatory requirements, and mitigation measures. However, the project would not combine with other projects to contribute to any cumulative impacts. In addition, Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

Alternative 5: No Action Alternative

Alternative 5, the No Action Alternative, would not contribute to any adverse cumulative impacts to soil resources. However, it would also not result in the beneficial impacts to these resources that would be associated with the modification of the boundary of the existing Ivanpah DWMA. By not protecting further areas from development, the No Action Alternative would allow future development projects to occur, and these projects could impact soil resources.

Alternative 6: No Project, Exclude Solar Alternative

By denying the solar energy application and eliminating the site from future solar energy development, Alternative 6 would remove the potential for future solar projects to potentially impact soil resources on the site.

Alternative 7: No Project, Approve Solar Alternative

By denying the solar energy application, Alternative 7 would allow existing land uses to continue on the project site as they are today. Although this alternative would not have the potential to impact soil resources through implementation of the Proposed Action, it could allow land uses, such as renewable energy development, that could impact these resources in the future. The cumulative impacts of any future projects to soil resources would be evaluated in project-specific environmental analyses at that time.

4.14.11 Mitigation Measures

No mitigation measures have been developed specifically to address impacts to soil resources. Instead, mitigation measures associated with several other resources evaluated in this EIS/EIR would be effective in reducing or avoiding impacts to soil resources, as discussed in this section. Specifically, the following mitigation measures would also be effective in addressing soil resources impacts:

MM-Water-7: Flood and Erosion Structure Damage Protection. Aboveground project features shall not be placed within waterway protection corridors (floodways) defined by city and county codes, and shall be located outside of known watercourses. Aboveground project features shall be designed and engineered to withstand potential flooding and erosion hazards. Although some project features may need to be placed within 100-year floodplain boundaries, or Flood Hazard Areas, they shall be designed per the County's Land Development Standards including Flood Control Standard Plats and Detention Basin Policy.

This mitigation measure would assist in reducing soil erosion and loss of topsoil by requiring implementation of stormwater management and flood protection systems such as sedimentation and debris basins, cement road crossings, and use of silt fence and fiber rolls.

MM-Water-8: Construction SWPPP Specifications. A Construction SWPPP shall be developed for the Stateline facility. Notices of Intent (NOIs) shall be filed with the State Water Resources Control Board (SWRCB) and the Lahontan Regional Water Quality Control Board. A Waste Discharge Identification Number shall be obtained prior to the issuance of construction permits. The SWPPP shall be stored at the construction site for reference by construction personnel and for inspection review. The SWPPP shall include BMPs that would be adhered to during construction in order to stabilize graded areas and waterways, and reduce erosion and sedimentation. Such BMPs may include but are not limited to those described below.

- Erosion minimizing efforts such as straw wattles, water bars, covers, silt fences, and sensitive area access restrictions (for example, flagging) that would be installed before clearing and grading begins. For protection of desert tortoise and other wildlife, silt fence shall only be installed on interior fences located within the exterior desert tortoise fence, so that tortoises will not be able to come in contact with the silt fence.
- Mulching, seeding, or other suitable stabilization measures would be used to protect exposed areas during construction activities.

- During construction activities, measures would be in place to ensure that contaminants are not discharged from the construction sites.
- Debris and sediment basins would be established, both upgradient and downgradient, as necessary, to capture silt and other materials, which might otherwise be carried from the site by rainwater surface runoff. The basins shall be designed in accordance with the County Detention Basin Policy, which includes standards for sizing and armoring. This would require armoring on both the upgradient and downgradient (water release) sides of each basin.
- Straw wattles (or comparably effective devices [as determined by the on-site Civil Engineer, in consultation with the Environmental Monitor]) shall be placed on the downslope sides of the proposed work which would direct flows into temporary sedimentation basins.
- Stormwater protection berms positioned in the area of facility structures (substation and O&M Building).
- The SWPPP shall include a Sedimentation and Erosion Control Plan to minimize the potential for project sediment to leave the site and result in downstream sedimentation.
- All erosion control materials shall be biodegradable and natural fiber.

All be BMPs required by the SWPPP shall be checked and maintained regularly and after all larger storm events. All remedial work shall be done immediately after discovery so sedimentation control devices remain in good working order during the entire construction phase. Proper implementation will be verified by the Environmental Monitor.

This measure would also assist in reducing soil erosion and loss of topsoil by requiring the Applicant to comply with the Clean Water Act, specifically provisions requiring development and implementation of a Construction SWPPP.

MM-Water-9: Storm Water Management Plan. The project owner shall implement the requirements of their Storm Water Management Plan (First Solar 2012k) to operate and monitor to effectiveness of their proposed stormwater management system.

The Storm Water Management Plan shall be submitted to both the BLM and the County for review and approval and shall include a plan to monitor and inspect periodically, before first seasonal and after every storm event:

- Security and Tortoise Exclusion Fence: Inspect for damage and buildup of sediment or debris.
- Facility structures within drainages or subject to drainage overflow: Inspect for tilting, damage, depth of scour compared to depth below ground.
- Drainage Channels: Inspect for substantial migration or changes in depth, and transport of trash, debris, or broken PV module components.
- Stormwater protection features, including protection berms, culverts, and cement road crossings.
- Constructed Debris and Sediment Basins: Inspect for scour and structural integrity issues caused by erosion, and for sediment and debris buildup.
- Ivanpah Playa Surface: Inspect for changes in the surface texture and quality from sediment buildup, erosion, or transported debris.

Short-Term Incident-Based Response:

- Security and Tortoise Exclusion Fence: Repair damage, and remove built-up of sediment and debris.
- Facility structures: Remove broken materials, damaged structure, and wiring from the ground, and replace with materials meeting original construction specifications.
- Drainage Channels: No short-term response necessary unless changes indicate risk to facility structures.
- Constructed Debris and Sediment Basins: Repair damage, maintain erosion control measures and remove built-up sediment and debris.
- Ivanpah Playa Surface: Remove transported debris, notify BLM to develop plan for addressing sedimentation or erosion issues.

Long-Term Design-Based Response:

- Propose operation/BMP modifications to address ongoing issues. Include proposed changes to monitoring and response procedures, frequency, or standards.
- Propose design modifications to address ongoing issues. This may include construction of additional active storm water management diversion channels and/or detention ponds.
- Inspection, short-term incident response, and long-term design-based response may include activities both inside and outside of the approved right-of-way. For activities outside of the approved right-of-way, the Applicant will notify BLM and acquire environmental review and approval before field activities begin.

At least sixty (60) days prior to commercial operation, the project owner shall submit to the BLM and the County a copy of the Storm Water Management Plan for review and approval prior to commercial operation. The Applicant shall retain a copy of this plan onsite at the power plant at all times.

This measure would ensure that systems designed to manage stormwater flow, minimize the potential for soil erosion, and protect facility structures from stormwater damage would continue to operate as designed following initial construction. In addition, this measure would require ongoing monitoring and response actions, if necessary to address erosion, sedimentation, and/or stormwater damage issues.

MM-Veg-5: Revegetation of Temporary Disturbed Areas and Project Site. *The full project site shall be revegetated according to the Applicant's Closure, Decommissioning, and Reclamation Plan (First Solar 2012d) following project decommissioning. In addition, any areas temporarily disturbed during construction would be re-vegetated, using the same methods, as soon as construction is completed.*

The Plan would be amended to include the following requirements:

Topsoil Application

Stored topsoil would be reapplied as a layer over decompacted subgrade material as a means of implementing the restoration program. The topsoil layer shall be a minimum of 3 inches in depth. The topsoil layer shall be bonded to the subgrade with a lightly-loaded sheepsfoot roller, a land imprinter, or other implement that interlocks material from the two layers without causing bulk density in excess of 1.6 grams per cubic centimeter. Seeds may be distributed concurrently with layer bonding if a land imprinter is employed for both purposes.

Seed Application

The vegetation to be introduced to the site shall consist entirely of plant species native to the northern Mojave Desert. No exotic plant species can be included on the seed lists nor introduced with native species. Exotic species, regardless of their presence in the original vegetation, shall not be counted as successful vegetation establishment.

Batches of seeds collected or produced for this project shall be tested by a certified seed testing laboratory that shall provide for each batch of seeds determinations of purity, germination, and seed count. Seeds not sorted by plant species, including collections from under shrubs, from depressions in the soil, and from harvester ant caches, shall be used to supplement defined seed batches but shall not be included in the claim of known seed applications.

Seed application would be done by methods that provide good soil contact and protection from granivores. Information about the imprinting process and model specifications for imprinting contracts are available in St. John and Dixon (1996). Seed shall be applied by methods that provide good seed-soil contact. The most successful methods in similar conditions are land imprinting or broadcasting followed by a roller that shall press seeds into the soil but not cause heavy compaction.

Mulch application is done at the option of the operator. Mulch application to the soil needs to consist of local non-weedy materials, the collection of which is incidental to other activities onsite. In no case may mowing or grading of native vegetation be carried out for the sole purpose of generating mulch. Mulch needs to be applied only to the soil surface unless the soil has already been inverted or severely disturbed through other procedures. Materials of relatively high nitrogen content, including alfalfa hay, may not be applied.

Mycorrhizal inoculation shall be carried out in all planting areas having fewer than one spore per cubic centimeter of topsoil, where topsoil is defined as soil between the surface and 8 inches depth, or to bedrock if the soil is less than 8 inches in depth. Spore counts shall be carried out by methods given in Johnson et al. or other accepted methodology. Inoculation shall result in a minimum of one spore per cubic centimeter of soil as defined for initial spore counts. No inoculation shall be required in areas where the applicant is able to demonstrate that all plant species on the list of final desired vegetation are known to be non-host species. This condition might be found in saline or very alkaline soils.

Succulent Transplanting

Revegetation following decommissioning would include re-transplantation of succulents within the transplant areas. Equipment and methods to be used would be the same as those used for the initial removal and transplanting from the project area.

Performance Monitoring

Qualitative monitoring shall be conducted in years one to 10 at all restored areas. The goal of qualitative monitoring is to document conditions and evaluate the need for remediation to ensure the restored areas are progressing toward the performance success standard.

During monitoring, the success parameters (cover, density, and richness of annual and perennial vegetation) shall be estimated. Other site characteristics to be monitored in addition to the success parameters include soil erosion, natural recruitment of native plant species, reproduction, exotic plant species abundance, animal use, and pattern of established vegetation (i.e., presence of large interspaces). Lack of erosion at a site provides evidence that soils have been adequately stabilized, while natural recruitment and/or reproduction indicate that important

functional processes are in place that initiate regeneration, such as pollination and seed dispersal. Exotic species potentially compete with native perennial species, and relatively high abundance can have a negative effect on site conditions. Evidence of animal use is an indicator that habitat conditions are being restored. Patterns of established vegetation help determine whether large bare areas are indicative of site conditions or simply a result of the patchiness of surrounding vegetation.

Based on monitoring observations, the restored site shall be given a success rating of Exceeds Objectives, Acceptable, Unacceptable, or Severely Deficient, and determinations shall be made regarding remediation activities, as applicable. Remediation activities shall include reseeding the site, spot seeding, adding transplants, erosion control, and fencing. Recommendations may include waiting another year or two prior to any remediation to allow for favorable germination/establishment conditions, with approval of the BLM.

Photography shall be used to help document the status of recovery at all sites. Photo points shall be established and photographs shall be taken prior to disturbance, when restoration efforts are completed, and during each monitoring visit.

Monitoring shall be scheduled and reported to the BLM once per month during the first growing season after seed application, switching to once per quarter starting in July after seed application. Monitoring may be reduced to once per year in late March through mid-May of each year after the second growing season.

Performance monitoring shall be conducted annually during the spring flowering season, between mid-March and mid-May to assess restoration performance. Performance monitoring surveys of all vegetation on the subject sites shall be carried out in a manner able to detect project success. The entire project area shall be divided into vegetation types as described by Sawyer and Keeler-Wolfe. The boundaries of each vegetation type shall be compared with the baseline survey maps. Each vegetation type shall have soil, terrain, exposure, elevation, and slope clearly indicated. For each vegetation type, a list of perennials and appropriate annuals shall be provided. Surveys shall be performed at a season when the year's annuals are identifiable; generally from early March through late April. Survey methodology should emphasize accuracy rather than precision. BLM shall accept rapid methods such as the step-point method (Bonham 1988) provided transects are laid out in a manner that captures the true composition of the vegetation. The combined length of step-point transects in each vegetation type shall approximate the square root of the area of the vegetation type or at least 400 intercepts and shall be laid out to give unbiased representation of all portions of the vegetation type. Vegetation need not be divided into herb and shrub layers as long as all species intercepted by points are included in the survey. Additional species not encountered on the transects shall be recorded separately on a diversity list.

Restoration shall be considered successful if plant cover, density, and richness of native perennial vegetation (mainly dominant shrubs) is equal to or exceeds 70 percent for these parameters in undisturbed reference areas. A minimum of two undisturbed reference/control sites in the western Ivanpah Valley area shall be selected in cooperation with BLM.

MM-Air-1: Air Quality Construction Management Plan. The Applicant shall implement their Air Quality Construction Management Plan (First Solar 2012c) that describes the fugitive dust control measures that would be implemented and monitored at all locations of proposed facility construction. This plan shall comply with the mitigation measures described in the Fugitive Dust Control Rules enforced by MDAQMD (Rule 403.2), as well as the existing SIP available for PM_{10} and $PM_{2.5}$, and the BLM Fugitive Dust/PM_{10} Emissions Control Strategy for the Mojave Desert Planning Area. The plan shall be submitted to MDAQMD no less than 60 days prior to the start of construction. The plan shall be incorporated into all contracts and contract specifications for

construction work. The plan shall outline the steps to be taken to minimize fugitive dust generated by construction activities by:

- Describing each active operation that may result in the generation of fugitive dust;
- Identifying all sources of fugitive dust, e.g., earth moving, storage piles, vehicular traffic;
- Describing the control measures to be applied to each of the sources identified. The descriptions shall be sufficiently detailed to demonstrate that the best available control measures required by the air quality districts for linear projects are used; and
- Providing the following control measures, in addition to or as listed in the applicable rules but not limited to:
  - Frequent watering or stabilization of excavation, spoils, access roads, storage piles, and other sources of fugitive dust (parking areas, staging areas, other) if construction activity cause persistent visible emissions of fugitive dust beyond the work area;
  - Use of street sweeping and trackout devices at the construction site. Sweep streets daily (with water sweepers) if visible soil material is carried into adjacent public streets or wash trucks and equipment before entering public streets;
  - Apply chemical soil stabilizers or apply water to form and maintain a crust on inactive construction areas (disturbed lands that are unused for four consecutive days);
  - Cover stockpiles and suspend construction work when winds exceed 30 miles per hour;
  - Pre-watering of soils prior to clearing and trenching;
  - Pre-moisten, prior to transport, import and export dirt, sand, or loose materials;
  - Installing temporary coverings on storage piles when not in use. Cover loads in haul trucks or maintain at least six inches of free-board when traveling on public roads;
  - Dedicating water truck or high/capacity hose to any soil screening operations;
  - Minimizing drop height of material through screening equipment;
  - Reducing the amount of disturbed area where possible; and
  - Planting vegetative ground cover in disturbed areas as soon as possible following construction activities.

The Applicant or its designated representative shall obtain prior approval from the MDAQMD prior to any deviations from fugitive dust control measures specified in the Air Quality Construction Management Plan. A justification statement used to explain the technical and safety reason(s) that preclude the use of required fugitive dust control measures shall be submitted to the appropriate agency for review.

This measure would assist in reducing soil erosion and loss of topsoil by minimizing the areas of soil disturbance and vegetation removal by construction vehicles.

MM-Lands-2: The Decommissioning Plan shall ensure compliance with all applicable federal, State, and local plans, policies, and regulations at the time of decommissioning.

This mitigation measure would assist in reducing the potential for soil erosion or loss of topsoil following project decommissioning by requiring revegetation of the site.

MM-PH&S-1: Prior to the issuance of the ROW grant, the Applicant shall conduct a full geotechnical study to evaluate soil conditions and geologic hazards on the project site and

submit it for approval to the BLM. The geotechnical study must be signed by a California-registered professional engineer and must identify the following:

- Presence, if any, of potentially detrimental soil chemicals, such as chlorides and sulfates;
- Appropriate design measures for protection of reinforcement, concrete, and metal-structural components against corrosion (such as use of corrosion-resistant materials and coatings, increased thickness of project components exposed to potentially corrosive conditions, and use of passive and/or active cathodic protection systems);
- Location of fault traces and potential for surface rupture;
- Potential for seismically induced ground shaking, liquefaction, landslides, differential settlement, and mudflows;
- Stability of existing cut-and-fill slopes;
- Collapsible or expansive soils;
- Foundation material type;
- Potential for wind erosion, water erosion, sedimentation, and flooding;
- Location and description of unprotected drainages that could be impacted by the proposed development; and
- Recommendations for placement and design of facilities, foundations, and remediation of unstable ground.

Studies shall conform to industry standards of care and American Society for Testing and Materials (ASTM) standards for field and laboratory testing. Study results and proposed solutions shall be provided for review and approval to the BLM at least 60 days before final project design.

The Applicant shall determine the final siting of project facilities based on the results of the geotechnical study and implement recommended measures to minimize geologic hazards. The Applicant shall not locate project facilities on or immediately adjacent to a fault trace. The BLM will evaluate any final facility siting design developed prior to the issuance of the ROW grant to verify that geological constraints have been avoided.

This mitigation measure would reduce the potential for geologic hazards by requiring additional geotechnical study and implementation of appropriate project design.

4.14.12 Residual Impacts After Mitigation

Following implementation of BMPs and mitigation measures, all adverse impacts on soil resources resulting from construction, operation and maintenance, and decommissioning of the Stateline Solar Farm or an alternative would be avoided or substantially reduced. There would be no adverse unavoidable impacts on soil resources.

4.15 Special Designations

4.15.1 Methodology for Analysis

This analysis focuses on whether the proposed Stateline Solar facility (Proposed Action or Project) ROW grant, associated management actions, or alternatives would conflict with the management goals of any land areas for which BLM has applied special resource protection or land use designations. This section discusses the special designation impacts that would occur with implementation of the Proposed Action or alternatives. Impacts may occur during construction from noise, fugitive dust, and lighting that could affect users in designated Areas of Critical Environmental Concern (ACEC), recreation areas and/or Wilderness Areas, including visual impacts on users in designated Wilderness Areas. Visual impacts are discussed in further detail in Section 4.18.

4.15.2 CEQA Significance Criteria

Agriculture and Forestry Resources

The Proposed Action could affect agriculture and forestry resources if the project would:

- SD-1: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use.
- SD-2: Conflict with existing zoning for agricultural use or a Williamson Act Contract.
- SD-3: Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)).
- SD-4: Result in the loss of forest land or conversion of forest land to non-forest use.
- SD-5: Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

For the Proposed Action, the criteria listed above were determined to be inapplicable or would result in no impact and, therefore, are not addressed further in the impact analysis presented in this section. There is no designated Prime Farmland, Unique Farmland, or Farmland of Statewide Importance within the proposed Stateline Solar Farm area (Department of Conservation [DOC] 2008). Therefore, construction, operation and decommissioning of the project would not convert designated farmland to a nonagricultural use. None of the parcels on the project site are covered by Williamson Act contracts.

The project site is not designated as forest land by the California Department of Forestry and Fire Protection or the United States Department of Agriculture, Forest Service. The proposed facility would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production. The entire project site is located under the BLM's CDCA Plan. The proposed facility would not involve other changes in the existing environment that would result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use. Construction, operation, and decommissioning of the proposed facility would not have any direct or indirect impacts on Farmland or forest land.

Therefore, none of these CEQA criteria would be applicable to the Proposed Action, and they are not discussed further in this section.

4.15.3 Alternative 1: Proposed Action

4.15.3.1 Direct and Indirect Impacts

This analysis of direct and indirect impacts for the Proposed Action ROW grant is organized according to the following project phases: construction; operation and maintenance; and decommissioning.

As discussed in Section 3.16 (Environmental Setting of Special Designations), areas are designated ACECs due to the presence of significant natural, cultural and historic resources. Wilderness Areas, which are generally 5,000 acres or more in size, offer outstanding opportunities for solitude or a primitive and unconfined type of recreation; such areas may also contain ecological, geological, or other features that have scientific, scenic, or historical value. Temporary effects associated with fugitive dust, noise, and visual disturbance would not require the special designated areas within close proximity to the Proposed Action to remove their special designation status (i.e., ACEC, Wilderness Area, Historic Trail).

Construction

The proposed solar facility would be located within the vicinity of the following ACECs:

- Approximately 2 miles west of the Ivanpah DWMA;
- Approximately 10 miles southeast of the Mesquite Lake ACEC; and
- Approximately 8 miles northeast of the Clark Mountain ACEC.

The proposed solar facility would be located within the vicinity of the following national recreation area:

- Approximately 2 miles south of the Jean Lake/Roach Lake Special Recreation Management Area (SRMA).

The proposed solar facility would be located within the vicinity of the following wilderness areas:

- Immediately south of the Stateline Wilderness; and
- Approximately two miles east of the Mesquite Wilderness.

The proposed solar facility would not be located within the vicinity of any designated national scenic and historic trails or wilderness study areas. *A branch of the Mojave Road, a BLM-designated open route that passes within 2 miles to the southeast of the proposed Project, generally follows the historic route of the Mojave Trail.*

The proposed Stateline Solar Farm facility would have no direct effects on the areas with special designations during construction, since the site itself is not subject to any such designation. However, due to the proximity of the site to the specially designated areas mentioned above, temporary effects associated with fugitive dust, noise, and visual disturbance would be experienced by users of the ACECs, wilderness areas, and recreation areas. Fugitive dust during construction activities could impact the air quality experienced by users of these specially designated areas, as well as the introduction of construction noise caused by equipment required for construction, motor vehicle use, voices, music, or other worker-related sounds that could disturb the peaceful and serene environment enjoyed by users. Due to the prevailing wind direction towards the east and northeast, temporary dust pollutants would be experienced mostly by users of the Ivanpah DWMA and Jean Lake/Roach Lake SRMA. *These*

emissions would be reduced through the Air Quality Construction Management Plan required in mitigation measure MM-Air-1. Noise effects from construction equipment would most likely be experienced by users in the nearby Stateline Wilderness Area. *These effects would be reduced through the noise mitigation required in mitigation measure MM-Noise-1, but would likely still be adverse.* The character and quality of view experienced by users would be disturbed by the introduction of industrial structures including construction equipment, solar PV arrays, and additional transmission lines. Visual effects would be experienced by users of specially designated areas at far away distances, but the greatest visual impact would most likely be experienced by users within a 5-mile vicinity. *These effects would be reduced through mitigation measures MM-VR-1, MM-VR-2, MM-VR-3, and MM-VR-4 (discussed in Section 4.18), but effects would still be adverse.*

Operation and Maintenance

The proposed solar facility would be located within the vicinity of several specially designated areas, as mentioned above under "Construction".

There would be *long-term* visual impacts from the solar PV arrays, transmission lines, substation, and O&M facility. Visual effects would be experienced by users of specially designated areas at far away distances, but the greatest visual impact would most likely be experienced by users within a 5-mile vicinity. While operation and maintenance would not cause any direct impact on the special designations, visitors utilizing the wilderness and recreation areas would be impacted. For example, nighttime lighting from the facility would introduce a new source of light to the area and the character and quality of view experienced by recreation users would be disturbed by the appearance of *long-term* solar PV arrays, transmission lines, a project substation, and the O&M Building.

Decommissioning

The decommissioning of the project would be similar to the construction activities described earlier, and would include demolition and removal of above-ground and subsurface facilities and site contouring and restoration. However, the duration of decommissioning would be shorter than the duration of construction.

Decommissioning activities would cause temporary disturbance to users of the recreation and wilderness areas, similar to those described under "Construction" above. Fugitive dust during decommissioning activities could impact the air quality experienced by users as well as the introduction of noise caused by equipment required for decommissioning, motor vehicle use, voices, music, or other worker-related sounds that could disturb the peaceful and serene environment enjoyed by users. Due to the prevailing wind direction towards the east and northeast, temporary dust pollutants would be experienced mostly by users of the Ivanpah DWMA and Jean Lake/Roach Lake SRMA. Noise effects would most likely be experienced by users in the nearby Stateline Wilderness Area. The character and quality of view experienced by users would be disturbed by the dismantling of several industrial structures including PV arrays, transmission lines, project substation, and the O&M Building. Visual effects would be experienced by users of specially designated areas at far away distances, but the greatest visual impact would most likely be experienced by users within a 5-mile vicinity.

After the facility has been decommissioned, users would experience a beneficial impact, as the *long-term* visual impacts, described for "Operation and Maintenance" above, would be removed. Although revegetation in this desert region is difficult and generally of limited success, the site would return to a more natural undeveloped state.

Modify Boundary of Ivanpah DWMA

The modification of the Ivanpah DWMA would constitute a change in the boundaries of an established specially designated area. While this would change BLM's management and potential land uses, and would protect resources, on the *23,363* acre newly-added acreage, it would not have any effect on the management requirements, land uses, or resources on the existing portion of the DWMA. *However, it would likely have a beneficial effect on the area of the existing DWMA by providing further protection to the resources managed there.* The management objectives and requirements on the newly added acreage would be the same as those on the current DWMA.

By limiting future land uses within the newly-added *23,363* acre area, this action would reduce the potential for implementation of other large-scale projects that could generate air emissions, noise, or visual impacts within this portion of Ivanpah Valley. As a result, the modification of the DWMA boundary would have a beneficial impact on the other specially designated areas in the region, including the wilderness or recreation areas.

4.15.3.2 CEQA Significance Determinations

Appendix G of the State CEQA Guidelines does not provide significance criteria for special designations, except those stated for agriculture and forestry resources*, which do not apply. Therefore, no* significance determination has been made.

4.15.4 Alternative 2: 2,385 Ac Alternative

4.15.4.1 Direct and Indirect Impacts

This analysis of direct and indirect impacts for Alternative 2 is organized according to the following project phases: construction; operation and maintenance; and decommissioning.

Construction

Potential impacts on special designations during construction of Alternative 2 would be the same as described under "Construction" for the Proposed Action. As described above, temporary effects associated with fugitive dust, noise, and visual resources would be experienced by users of the ACECs, wilderness areas, and recreation areas. The Solar Farm site, gen-tie corridor, and access corridor under Alternative 2 would require approximately 2,385 acres of land, which is 242 acres (or about 12 percent) more than the Proposed Action. The acreage for the project would be in a bifurcated footprint, and would include an area of solar arrays located to the south of the Primm Valley Golf Course. This separate location for a portion of the facility would not have any additional effect on specially designated areas. Alternative 2 would utilize the same materials and equipment as the Proposed Action, and therefore the potential effects of fugitive dust, traffic, noise, and visual impacts would be the same as in the Proposed Action. However, due to the larger project site under this alternative, the duration of these effects may be incrementally longer. Temporary effects associated with fugitive dust, noise, and visual disturbance would not require any changes to the designations or status of specially designated areas within close proximity to the proposed facility.

Operation and Maintenance

Potential impacts on special designations during operation and maintenance of Alternative 2 would be *greater than those* described under "Operation and Maintenance" for the Proposed Action*, due to the increased project size and resulting visual impact.* As described above,

visitors utilizing the ACECs, wilderness areas, and recreation areas would experience effects associated with industrial structures until they are removed at the end of the project life (decommissioning). Because the solar arrays would cover a larger area, and in a bifurcated footprint, these effects would be greater for Alternative 2 than for the Proposed Action. Effects associated with visual disturbance would not require any changes to the designations or status of specially designated areas within close proximity to the proposed facility.

Decommissioning

Potential impacts on specially designated areas during decommissioning of the Alternative 2 would be the same as described under "Decommissioning" for the Proposed Action. As described above, effects associated with air quality, noise and visual resources would be experienced by users of the ACECs, wilderness areas, and recreation areas. Due to the larger project site under this alternative, the duration of these effects may be incrementally longer than the Proposed Action. Temporary effects associated with fugitive dust, noise, and visual disturbance would not require any changes to the designations or status of specially designated areas within close proximity to the proposed facility.

After Alternative 2 has been decommissioned, users would experience a beneficial impact, as the *long-term* visual impacts, described for "Operation and Maintenance" above, would be removed. Although revegetation in this desert region is difficult and generally of limited success, the site would return to a more natural undeveloped state.

Modify Boundary of Ivanpah DWMA

The modification of the Ivanpah DWMA under Alternative 2 would constitute a change in the boundaries of an established specially designated area. While this would change BLM's management and potential land uses, and would protect resources, on the *23,121* acre newly-added acreage, it would not have any effect on the management requirements, land uses, or resources on the existing portion of the DWMA. The management objectives and requirements on the newly added acreage would be the same as those on the current DWMA.

By limiting future land uses within the newly-added *23,121* acre area, Alternative 2 would reduce the potential for implementation of other large-scale projects that could generate air emissions, noise, or visual impacts within this portion of Ivanpah Valley. As a result, the modification of the DWMA boundary would have a beneficial impact on the other specially designated areas in the region, including the wilderness or recreation areas. The slightly different acreage associated with this modification under Alternative 2 would have a beneficial impact that would be similar to that of the Proposed Action.

4.15.4.2 CEQA Significance Determinations

Appendix G of the State CEQA Guidelines does not provide significance criteria for special designations, except those stated for agriculture and forestry resources. No significance determination has been made.

4.15.5 *Revised* Alternative 3: *1,685* Ac Alternative

4.15.5.1 Direct and Indirect Impacts

This analysis of direct and indirect impacts for *Revised* Alternative 3 is organized according to the following project phases: construction; operation and maintenance; and decommissioning.

Construction

Potential impacts on special designations during construction of *Revised* Alternative 3 would be the same as described under "Construction" for the Proposed Action. As described above, temporary effects associated with fugitive dust, noise, and visual resources would be experienced by users of the ACECs, wilderness areas, and recreation areas. The Solar Farm site, gen-tie corridor, and access corridor under *Revised* Alternative 3 would require approximately *1,685* acres of land, which is *458 acres smaller* than the project site under the Proposed Action. *Revised* Alternative 3 would utilize the same materials and equipment as the Proposed Action. *However, due to the reduced project size,* the potential effects of fugitive dust, traffic, noise, and visual impacts would be *reduced as compared to the* Proposed Action. Temporary effects associated with fugitive dust, noise, and visual disturbance would not require any changes to the designations or status of specially designated areas within close proximity to the proposed facility.

Operation and Maintenance

Potential impacts on special designations during operation and maintenance of *Revised* Alternative 3 would be the same as described under "Operation and Maintenance" for the Proposed Action. As described above, visitors utilizing the ACECs, wilderness areas, and recreation areas would experience effects associated with industrial structures until they are removed at the end of the project life (decommissioning). Effects associated with visual disturbance would not require any changes to the designations or status of specially designated areas within close proximity to the proposed facility.

Decommissioning

Potential impacts on specially designated areas during decommissioning of the *Revised* Alternative 3 would be the same as described under "Decommissioning" for the Proposed Action. As described above, effects associated with air quality, noise and visual resources would be experienced by users of the ACECs, wilderness areas, and recreation areas. Temporary effects associated with fugitive dust, noise, and visual disturbance would not require any changes to the designations or status of specially designated areas within close proximity to the proposed facility.

After the alternative has been decommissioned, users would experience a beneficial impact, as the *long-term* visual impacts, described for "Operation and Maintenance" above, would be removed. Although revegetation in this desert region is difficult and generally of limited success, the site would return to a more natural undeveloped state.

Modify Boundary of Ivanpah DWMA

The modification of the Ivanpah DWMA under *Revised* Alternative 3 would constitute a change in the boundaries of an established specially designated area. While this would change BLM's management and potential land uses, and would protect resources, on the *23,821* acre newly-added acreage, it would not have any effect on the management requirements, land uses, or resources on the existing portion of the DWMA. The management objectives and requirements on the newly added acreage would be the same as those on the current DWMA.

By limiting future land uses within the newly-added *23,821* acre area, *Revised* Alternative 3 would reduce the potential for implementation of other large-scale projects that could generate air emissions, noise, or visual impacts within this portion of Ivanpah Valley. As a result, the modification of the DWMA boundary would have a beneficial impact on the other specially

designated areas in the region, including the wilderness or recreation areas. The slightly different acreage associated with this modification under *Revised* Alternative 3 would have a beneficial impact that would be similar to that of the Proposed Action.

4.15.5.2 CEQA Significance Determinations

Appendix G of the State CEQA Guidelines does not provide significance criteria for special designations, except those stated for agriculture and forestry resources. No significance determination has been made.

4.15.6 Alternative 4: Reduced Acreage Alternative

4.15.6.1 Direct and Indirect Impacts

Alternative 4 is conceptually similar to the Proposed Action (Alternative 1), but would be placed within a different land area which comprises 1,766 acres. The land area associated with Alternative 4 would be the same as the northern portion of the bifurcated footprint of Alternative 2. This analysis of direct and indirect impacts for Alternative 4 is organized according to the following project phases: construction; operation and maintenance; and decommissioning.

Construction

Potential impacts on special designations during construction of Alternative 4 would be the same as described under "Construction" for the Proposed Action. As described above, temporary effects associated with fugitive dust, noise, and visual resources would be experienced by users of the ACECs, wilderness areas, and recreation areas. The Solar Farm site, gen-tie corridor, and access corridor under Alternative 4 would require approximately 1,766 acres of land, which is 377 acres (or about 17 percent) smaller than the project site under the Proposed Action. Alternative 4 would utilize the same materials and equipment as the Proposed Action. *However, due to the reduced project size, the* potential effects of fugitive dust, traffic, noise, and visual impacts would be *reduced from those associated with the* Proposed Action. Temporary effects associated with fugitive dust, noise, and visual disturbance would not require any changes to the designations or status of specially designated areas within close proximity to the proposed facility.

Operation and Maintenance

Potential impacts on special designations during operation and maintenance of Alternative 4 would be the same as described under "Operation and Maintenance" for the Proposed Action. As described above, visitors utilizing the ACECs, wilderness areas, and recreation areas would experience effects associated with industrial structures until they are removed at the end of the project life (decommissioning). Effects associated with visual disturbance would not require any changes to the designations or status of specially designated areas within close proximity to the proposed facility.

Decommissioning

Potential impacts on specially designated areas during decommissioning of the Alternative 4 would be the same as described under "Decommissioning" for the Proposed Action. As described above, effects associated with air quality, noise and visual resources would be experienced by users of the ACECs, wilderness areas, and recreation areas. Temporary effects associated with fugitive dust, noise, and visual disturbance would not require any changes to

the designations or status of specially designated areas within close proximity to the proposed facility.

After the alternative has been decommissioned, users would experience a beneficial impact, as the *long-term* visual impacts, described for "Operation and Maintenance" above, would be removed. Although revegetation in this desert region is difficult and generally of limited success, the site would return to a more natural undeveloped state.

Modify Boundary of Ivanpah DWMA

The modification of the Ivanpah DWMA under Alternative 4 would constitute a change in the boundaries of an established specially designated area. While this would change BLM's management and potential land uses, and would protect resources, on the *23,740* acre newly-added acreage, it would not have any effect on the management requirements, land uses, or resources on the existing portion of the DWMA. The management objectives and requirements on the newly added acreage would be the same as those on the current DWMA.

By limiting future land uses within the newly-added *23,740* acre area, Alternative 4 would reduce the potential for implementation of other large-scale projects that could generate air emissions, noise, or visual impacts within this portion of Ivanpah Valley. As a result, the modification of the DWMA boundary would have a beneficial impact on the other specially designated areas in the region, including the wilderness or recreation areas. The slightly different acreage associated with this modification under Alternative 4 would have a beneficial impact that would be similar to that of the Proposed Action.

4.15.6.2 CEQA Significance Determinations

Appendix G of the State CEQA Guidelines does not provide significance criteria for special designations, except those stated for agriculture and forestry resources. No significance determination has been made.

4.15.7 Alternative 5: No Action Alternative

4.15.7.1 Direct and Indirect Impacts

Under this alternative, the BLM would not approve the proposed Stateline Solar facility and would not amend the CDCA Plan. As a result, no solar energy project would be constructed, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan, as amended. Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, no new structures or facilities would be constructed or operated on the site and no new ground disturbance would occur. As a result, none of the impacts on specially designated areas from construction, operation, or decommissioning of the project would occur.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under the No Action Alternative. Land uses and management requirements associated with the Ivanpah DWMA would continue as they are today. By itself, the No Action Alternative would have no impact on any of the specially designated areas. However, by not including the action of modifying the boundary of the Ivanpah DWMA, this alternative would not result in the beneficial impacts to the specially designated areas in the region by limiting future development projects.

4.15.7.2 CEQA Significance Determinations

Appendix G of the State CEQA Guidelines does not provide significance criteria for special designations, except those stated for agriculture and forestry resources. No significance determination has been made.

4.15.8 Alternative 6: No Project, Exclude Solar Alternative

4.15.8.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. It is expected that the site would remain in its existing condition unless another use is designated in this amendment. No solar project would be approved for the site under this alternative, so no new structures or facilities would be constructed or operated on the site and no new ground disturbance would occur. As a result, none of the impacts on specially designated areas from construction, operation, or decommissioning of the project would occur.

Modify Boundary of Ivanpah DWMA

The modification of the Ivanpah DWMA under Alternative 6 would constitute a change in the boundaries of an established specially designated area. While this would change BLM's management and potential land uses, and would protect resources, on the 25,506 acre newly-added acreage, it would not have any effect on the management requirements, land uses, or resources on the existing portion of the DWMA. The management objectives and requirements on the newly added acreage would be the same as those on the current DWMA.

By limiting future land uses within the newly-added 25,506 acre area, Alternative 6 would reduce the potential for implementation of other large-scale projects that could generate air emissions, noise, or visual impacts within this portion of Ivanpah Valley. As a result, the modification of the DWMA boundary would have a beneficial impact on the other specially designated areas in the region, including the wilderness and/or recreation areas. The slightly different acreage associated with this modification under Alternative 6 would have a beneficial impact that would be similar to that of the Proposed Action.

4.15.8.2 CEQA Significance Determinations

Appendix G of the State CEQA Guidelines does not provide significance criteria for special designations, except those stated for agriculture and forestry resources. No significance determination has been made.

4.15.9 Alternative 7: No Project, Approve Solar Alternative

4.15.9.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The Stateline Solar Farm Project would not be constructed on the project site and the project site would remain vacant in the near-term. *As a result, none of the impacts on specially designated areas from construction, operation, or decommissioning of the Project would occur. However*, it is possible that another solar energy project could be constructed on the site. If that occurred, it is likely that impacts on special designation areas would result from the construction, operation, and decommissioning of the solar technology and resulting ground disturbance, and would likely be

similar to the impacts on special designation areas from the proposed facility. *The impacts of such future projects are speculative at this time.*

Modify Boundary of Ivanpah DWMA

Under Alternative 7, the boundaries of the existing Ivanpah DWMA would not be modified. By itself, this component of this No Project Alternative would have no impact on any of the specially designated areas. However, by not including the action of modifying the boundary of the Ivanpah DWMA, this alternative would not result in the beneficial impacts to the specially designated areas in the region by limiting future development projects.

4.15.9.2 CEQA Significance Determinations

Appendix G of the State CEQA Guidelines does not provide significance criteria for special designations, except those stated for agriculture and forestry resources. No significance determination has been made.

4.15.10 Cumulative Impacts

4.15.10.1 Geographic Extent/Context

Several special designation areas are located in the general vicinity of the project area. These areas are discussed in Section 3.15, and include the following:

- Ivanpah DWMA;
- Mesquite Lake ACEC;
- Clark Mountain ACEC;
- Ivanpah Dry Lake;
- Jean Lake/Roach Lake SRMA;
- Stateline Wilderness; and
- Mesquite Wilderness.

Due to the presence of several special designation areas within the vicinity of the project site and the Proposed Action's potential contribution to cumulative impacts on these areas, the geographic extent of analysis is a 10-mile radius from the project site. Locations most likely to be affected within special designation areas would be included within this 10-mile radius. Beyond this 10-mile radius, potential impacts associated with fugitive dust, noise, and visual disturbance would be greatly reduced. Potential cumulative impacts could occur for the entire duration of the Proposed Action, from the initiation of construction to the conclusion of facility decommissioning.

4.15.10.2 Existing Cumulative Conditions

The project site and surrounding special designation areas consist of undeveloped and open space land. Locations in the region that are not included within the specially designated areas have undergone commercial, industrial, and residential development, resulting in alterations to the natural landscape, including effects from fugitive dust emissions, noise and visual resources on special designation areas. Temporary impacts from fugitive dust emissions and noise have been and continue to be reduced through mitigation measures. However, *long-term* impacts to visual resources associated with special designated areas remain.

4.15.10.3 Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects, various BLM authorized actions/activities, proposed or approved projects within the County's jurisdiction, and other actions/activities that the agencies consider reasonably foreseeable. Table 4.1-2 summarizes the cumulative projects that would have the potential to combine with the Proposed Action and result in cumulative impacts to specially designated areas. Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA, or will do so prior to approval. Even if environmental review has not been completed for the cumulative projects described in Table 4.1-2, their effects were considered in the cumulative impacts analysis in the *PA and* EIS/EIR.

Projects currently under construction in the vicinity of the proposed facility include the Ivanpah SEGS solar facility (3,471 acres). Proposed projects in the vicinity of the proposed facility that would have potentially adverse impacts to special designations include the Southern Nevada Supplemental Airport, Desert Xpress high speed passenger rail line, Silver State Phase 2 solar facility, and the Calnev Pipeline Expansion Project.

These projects were selected based on the distance in which impacts from air emissions, noise, and visual resources could be experienced within the specially designated areas. Several types of development projects could contribute to the cumulative impact of the Proposed Action and alternatives, including commercial and industrial development, utility, transportation, and renewable energy projects. These types of reasonably foreseeable projects could combine with potential impacts of the Proposed Action or an alternative to affect special designations within the geographic extent of this cumulative analysis.

Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA or will do so prior to approval. These environmental reviews, as well as applicable Federal, state, and local regulations, include mitigation measures and requirements that would avoid or reduce air emissions, noise, and visual impacts of each of the independent projects. However, all of the cumulative projects listed above would have the potential of combining impacts with the Proposed Action, as construction schedules and operational periods would overlap. Therefore, effects of these projects were considered in the cumulative impacts analysis below.

4.15.10.4 Cumulative Impacts Associated with Proposed Action

Construction

Numerous energy-related development projects, including the proposed Stateline Solar Farm facility, would adversely affect the viewscape by adding temporary fugitive dust emissions during construction; temporary and *long-term* structures, fences, and other features that could interrupt landscape views; and increased noise caused by equipment required for construction and decommissioning, motor vehicle use, voices, music, or other worker-related sounds. Any of these activities individually or in combination could cause some users of the specially designated areas to seek out other areas of the desert for their wilderness or recreation activities and experiences.

Other projects identified within the cumulative project list described above have been and would be developed and operate on a similar magnitude of the proposed Stateline Solar Farm facility. These projects, including I-15, the Primm Resorts, Ivanpah SEGS facility, Silver State Phases 1 and 2, Desert Xpress, Molycorp Mine and Phoenix Project, Southern Nevada Supplemental Airport, and EITP are all located within the general vicinity of the proposed Stateline facility, and would present similar effects to the air quality, noise, and visual resources associated with the special designation areas.

These potential cumulative impacts on specially-designated wilderness and recreation areas could affect visitor attraction to these and other specially designated areas within the vicinity of the project area, since the myriad of projects in the cumulative scenario, in combination, would add large- and small-scale industrial, utility-related, and other uses in the vicinity of the project and the region more generally.

Unavoidable impacts to ACECs, recreation, and designated wilderness areas would result since construction, operation, and decommissioning of the Proposed Action would alter the adjacent scenery to a more industrial setting, as viewed from the special designation areas. Thus, the effects on special designation areas would continue until project facilities are dismantled and the vegetation and landforms of the site are reclaimed. The existing landscape setting would be restored during the decommissioning phase, but effects would be long-term due to the length of time required for revegetation of desert areas.

These potential impacts to specially designated areas are also discussed in the Air Resources, Noise, and Visual Resources sections, and mitigation measures for construction, operations and maintenance, and decommissioning activities have been proposed to reduce the impacts of the Proposed Action. Similar mitigation measures have been required for recently-approved projects, and would likely be required for projects that are currently under environmental review. However, adverse visual impacts associated with the industrial/commercial appearance of these projects would remain, even with mitigation.

Cumulative effects associated with fugitive dust, noise, and visual disturbance from construction would not require any changes to the designations or status of specially designated areas within close proximity to the proposed Stateline Solar Farm facility. Thus, construction of the proposed facility would not contribute substantially to cumulative impacts on specially designated areas.

Operation and Maintenance

It is expected that all of the cumulative projects described above would be operational at the same time as the Proposed Action. As a result, there would be long-term impacts associated with air emissions, noise, and visual appearance of those cumulative projects.

The Proposed Action would contribute to these possible long-term operational cumulative impacts since more than 25,000 acres of land are proposed for solar energy and other developments in the Ivanpah Valley area. The conversion of these lands would modify the visual appearance of the area*, giving it a more industrial character as viewed from the special designation areas*, and most of these impacts would be visible from within the specially designated areas.

Cumulative effects associated with fugitive dust, noise, and visual disturbance from operations would not require any changes to the designations or status of specially designated areas within close proximity to the proposed Stateline Solar Farm facility. Thus, operations of the proposed facility would not contribute substantially to cumulative impacts on specially designated areas.

Decommissioning

The decommissioning of the Proposed Action is expected to result in adverse impacts similar to those identified for construction. Air emissions, noise, and visual impacts from the decommissioning activities associated with other renewable energy and other projects would have the potential to combine with those of the Proposed Action, which could result in an adverse cumulative impact to specially designated areas. However, the Proposed Action's contribution to cumulative impacts to specially designated areas during decommissioning would be temporary. Following decommissioning, the land area associated with the Proposed Action would be restored, and adverse impacts would cease.

Cumulative effects associated with fugitive dust, noise, and visual disturbance from decommissioning would not require any changes to the designations or status of specially designated areas within close proximity to the proposed Stateline Solar Farm facility. Thus, decommissioning of the proposed facility would not contribute substantially to cumulative impacts on specially designated areas.

Modify Boundary of Ivanpah DWMA

The modification of the Ivanpah DWMA would constitute a change in the boundaries of an established specially designated area. This modification of the DWMA boundaries would not, however, have any effect on any of the other specially designated areas in the region, including the wilderness or recreation areas. In addition, none of the past, present, or reasonably foreseeable future projects would include similar modifications of any specially designated areas. Therefore, the modification of the boundary would not contribute to adverse cumulative impacts to these areas.

By limiting future land uses within the newly-added *23,363* acre area, this action would reduce the potential for implementation of other large-scale projects that could generate air emissions, noise, or visual impacts within this portion of Ivanpah Valley. The modification of the DWMA boundary would combine with other management actions that have limited land uses, such as the designation of the other ACECs, wilderness areas, and recreation areas. Together, these management actions would contribute to a beneficial cumulative impact on the other specially designated areas in the region, including the wilderness or recreation areas.

4.15.10.5 CEQA Significance Determinations

Appendix G of the State CEQA Guidelines does not provide significance criteria for special designations, except those stated for agriculture and forestry resources. No significance determination has been made.

4.15.10.6 Alternatives

Alternative 2: 2,385 Ac Alternative

The impacts to specially designated areas associated with Alternative 2 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with Alternative 2 would be the same as those described above for the Proposed Action.

***Revised* Alternative 3: *1,685* Ac Alternative**

The impacts to specially designated areas associated with *Revised* Alternative 3 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with *Revised* Alternative 3 would be the same as those described above for the Proposed Action.

Alternative 4: Reduced Acreage Alternative

The impacts to specially designated areas associated with Alternative 4 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with Alternative 4 would be the same as those described above for the Proposed Action.

Alternative 5: No Action Alternative

By having no associated air emissions, noise, or visual impacts, Alternative 5 (the No Action Alternative) would not contribute to any of the potentially adverse cumulative impacts to specially designated areas as the action alternatives. However, it would also not result in the beneficial impacts to specially designated areas that would be associated with the modification of the boundary of the Ivanpah DWMA. The No Action Alternative would continue the current situation of allowing BLM to consider other land uses, including land uses that could create air emissions, noise, or visual impacts (such as additional development of solar power facilities), on the project site and in the Northern Ivanpah Valley Unit.

Alternative 6: No Project, Exclude Solar Alternative

By denying the solar energy application, Alternative 6 would have no associated air emissions, noise, or visual impacts, and would therefore not contribute to any of the potentially adverse cumulative impacts to specially designated areas as the action alternatives. In addition, by excluding the proposed facility area from future solar development, Alternative 6 would combine with other federal actions that have limited land uses over large areas in the region, and would therefore contribute incrementally to reducing the potential for large-scale projects that create air emissions, noise, or visual impacts. As such, this alternative would have a beneficial contribution to cumulative impacts to specially designated areas.

Alternative 7: No Project, Approve Solar Alternative

By denying the solar energy application, Alternative 7 would have no associated air emissions, noise, or visual impacts, and would therefore not contribute to any of the potentially adverse cumulative impacts to specially designated areas as the action alternatives. However, it would also not result in the beneficial impacts to specially designated areas that would be associated with the modification of the boundary of the Ivanpah DWMA. This alternative would also continue the current situation of allowing BLM to consider other land uses, including implementation of another solar facility that could create air emissions, noise, or visual impacts on the project site.

4.15.11 Mitigation Measures

No mitigation measures are recommended specifically to address impacts to specially designated areas *other than those are ready identified*. Sections 4.2 (Air Quality), 4.9 (Noise), and 4.18 (Visual Resources) *include* a description of mitigation measures that would be implemented to reduce the project's impact to air quality, noise, and visual resources.

4.15.12 Residual Impacts After Mitigation

By contributing to the industrial and commercial appearance of Ivanpah Valley, the visual impact of the proposed solar facility on users in the nearby specially designated areas would constitute an unavoidable residual impact.

4.16 Transportation and Public Access

This section discusses the transportation and public access impacts that would occur with implementation of the Proposed Action and alternatives. Effects may occur from physical changes to roads, construction activities, introduction of construction- or operations-related traffic on local roads, or changes in traffic volumes created by either direct or indirect workforce changes in the area. Information contained within this section was provided primarily by the Traffic Study for the Stateline Solar Farm Project, San Bernardino County, California, February 2012, prepared by LSA Associates, Inc. (First Solar 2012l).

4.16.1 Methodology for Analysis

As discussed in Section 3.16, the operations of the project area intersections and roadway segments are characterized using the concept of "Level of Service" (LOS). LOS is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis, taking into account factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. LOS provides an index to the operational qualities of a roadway segment or an intersection. LOS designations range from A through F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. LOS designation is reported differently for signalized and unsignalized intersections, as well as for roadway segments.

For unsignalized intersections, LOS is determined by the computed or measured control delay and is defined for each minor movement. LOS is not defined for the intersection as a whole. Table 4.16-1 depicts the criteria, which are based on the average control delay for any particular minor movement.

Table 4.16-1. Level of Service for Unsignalized Intersections

Level of Service	Unsignalized Intersection Average Delay per Vehicle (seconds)
A	≤10
B	>10 and ≤ 15
C	>15 and ≤ 25
D	>25 and ≤ 35
E	>35 and ≤ 50
F	>50

Source: Transportation Research Board (2000)

LOS F exists when there are insufficient gaps of suitable size to allow a side street demand to safely cross through a major street traffic stream. This level of service is generally evident from extremely long control delays experienced by side-street traffic and by queuing on the minor-street approaches. The method, however, is based on a constant critical gap size; that is, the critical gap remains constant no matter how long the side-street motorist waits.

LOS F may also appear in the form of side-street vehicles selecting smaller-than-usual gaps. In such cases, safety may be a problem, and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in

adjustments to normal gap acceptance behavior, which are more difficult to observe in the field than queuing.

Freeway segment analysis involves a comparison of Average Daily Traffic (ADT) volumes and an approximate daily capacity on the subject roadway. Table 4.16-2 shows the LOS criteria for freeway segments.

Table 4.16-2. Level of Service Criteria for Freeway Segments

Level of Service	Density (pc/mi/ln) for Basic Freeway Segments Average Delay per Vehicle (seconds)
A	≤11
B	>11 and ≤ 18
C	>18 and ≤ 26
D	>26 and ≤ 35
E	>35 and ≤ 45
F	>45

Source: Transportation Research Board (2000)
pc/mi/ln = passenger cars per mile per lane

4.16.1.1 Trip Generation and Distribution

The Stateline Solar Farm Project construction would take approximately 2 to 4 years from the commencement of the construction process to complete the project. Typical construction work schedules are expected to be from 7:00 a.m. to 5:00 p.m., Monday through Friday, which complies with the San Bernardino County noise ordinance restrictions for construction activity of 7:00 a.m. to 7:00 p.m., except Sundays or Federal holidays. Due to hot desert conditions, the Applicant requests the flexibility to arrange work schedules into the evening or early morning hours. For example, during the high temperature months, installation crews may choose the option to work from 2 a.m. to 12 p.m. to avoid excessive heat exposure and take advantage of the coolest temperature hours. For safety reasons, certain construction tasks, including final electrical terminations, must be performed after dark when no energy is being produced.

Construction Trip Generation

As discussed in the Traffic Study prepared by LSA (First Solar 2012m) trip generation during construction activities is based on the estimated number of workers and types of equipment used during each phase of construction. Construction equipment would be delivered to the site at the start of the construction activity for which the equipment is required and hauled out upon completion of the activity. The delivery of construction materials and the removal of waste would occur generally throughout the day and throughout the entire construction period.

The majority of construction vehicle trips would be from construction workers traveling to and from the site. It is anticipated that the number of on-site construction workers would average approximately 400 employees. The peak on-site workforce would be approximately 600 employees. Desert Stateline, LLC (the Applicant) has indicated that they would hire a San Bernardino County-based workforce to the extent feasible. However, it is expected that some workers would travel to and from the project site each day from the Barstow, California, and Las Vegas, Nevada, areas. It is anticipated that some construction workers would stay in Primm, Nevada, approximately 1.5 miles northeast of the project site. In order to account for carpooling, it was assumed that vehicle would have two construction workers commuting to and

from the site. The estimated maximum daily trip generation rate for construction workers is 400 inbound vehicle trips during the a.m. peak hour and 400 outbound vehicle trips during the p.m. peak hour.

Truck traffic during construction is expected to average approximately 40 inbound and 40 outbound truck trips per day, including 13 deliveries of materials and supplies plus other construction-related truck trips. The 40 truck trips per day would result in 80 trips (i.e., 40 inbound trips and 40 outbound trips). Although construction truck trips and deliveries would be planned to during non-peak hours, it is assumed that approximately 10 percent of the truck trips would occur in the a.m. peak hour and 10 percent would occur in the p.m. peak hour.

Large construction trucks occupy more road capacity than passenger vehicles due to their greater size, reduced maneuverability and slower start-up times. To account for the greater road capacity used by large construction trucks, passenger car equivalent (PCE) factors are applied to the vehicle trip generation. For truck trips, a PCE factor of 2.0 was applied. This means that each truck is considered to be two passenger vehicles in terms of the road capacity used by each truck.

The construction trip generation for the project is illustrated in Table 4.16-3. The existing–plus-project traffic volumes are shown on Figure 4.16-1.

Table 4.16-3. Construction Trip Generation

	AM Peak Hour[2]			PM Peak Hour			Daily
	In	**Out**	**Total**	**In**	**Out**	**Total**	**Total**
Employee Vehicles	400	0	400	0	400	400	800
Truck Trips[1]	8	8	16	8	8	16	80
Total	**408**	**8**	**416**	**8**	**408**	**416**	**880**

Source: First Solar 2011

[1] Peak-hour truck trips equal 10 percent of daily truck trips. A passenger car equivalent (PCE) factor of 2.0 was applied to the truck trips.

[2] Peak hour is the hourly volume with the highest value in a 24-hour period.

Trip Distribution

According to the Traffic Study prepared by LSA (First Solar 2012m), it was assumed that most workers would be housed in Primm, Nevada. As such, 80 percent of the construction vehicle trips would commute to and from the site via I-15 between the project site and Primm and 20 percent would commute to and from the site via I-15 between the project site and Baker, California.

Operation Trip Generation

As stated in the Applicant's POD, the workforce for O&M and security purposes is estimated to be 7 to 10 full-time workers. However, in order to provide a conservative analysis of traffic impacts, the traffic analysis conducted by LSA (First Solar 2012m) assumed that the maximum number of employees anticipated at any one time for operations, maintenance, and security would be 12 full-time workers. Based on this assumption, the project would generate approximately 12 trips during the a.m. peak hour when employees commute to the site and 12 trips during the p.m. peak hour when employees leave the site. It is possible that some truck trips to and from the site would occur when the replacement of onsite equipment is needed. However, operation of the project would not require regularly schedule truck trips.

Decommissioning Trip Generation

The project would be in operation for a period of 30 years. Once operation of the project ceases, the onsite equipment would be recycled to the extent feasible. Onsite equipment and materials that cannot be recycled would be disposed of safely. The project site could then be utilized by other uses that conform to applicable land use regulations that are in effect at the time of closure. The overall duration of decommissioning activities is expected to be shorter than construction of the project. It is anticipated that decommissioning of the Stateline Solar Farm Project would require fewer truck trips and employees than construction of the project.

4.16.2 CEQA Significance Criteria

The following criteria were used to determine the significance of impacts under CEQA:

- Trans-1: Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system;
- Trans-2: Exceed a level of service standard established by the county congestion management agency for designated roads or highways;
- Trans-3: Result in change to air traffic patterns;
- Trans-4: Substantially increase hazards due to a design features or incompatible uses;
- Trans-5: Result in inadequate emergency access;
- Trans-6: Result in inadequate parking capacity; or
- Trans-7: Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities.

For the Proposed Action and its alternatives, the criterion numbered Trans-3 was determined to be inapplicable or would result in no impact and, therefore, is not addressed further in the impact analysis presented in this section. This criterion was determined to be inapplicable or to result in no impact as the project site would not be located within 2 miles of a public airport or public use airport that would result in a safety hazard for people residing or working in the project area. There would be no impacts under this criterion from any component of the Proposed Action or alternatives.

4.16.3 Alternative 1: Proposed Action

4.16.3.1 Direct and Indirect Impacts

This analysis of direct and indirect impacts for the Proposed Action is organized according to the following project phases: construction; operation and maintenance; and decommissioning.

Construction

During construction, transportation systems in the Proposed Action area would be impacted by an increase in traffic due to an influx of construction workers and the delivery of construction equipment and materials. Construction equipment and materials deliveries would occur throughout the construction period. Construction of the Proposed Action would take between 2 to 4 years to complete.

Construction equipment for the Proposed Action includes various size trucks, tractors, trailers, dozers, trenching machines, dills, and generators. Most of the heavy construction equipment would be delivered from storage yards to construction sites on lowboy trucks or trailers.

Construction equipment would be left overnight onsite when feasible or, where overnight onsite storage is infeasible, at the contractor yards or at other storage yards in the area.

The Applicant would use existing roads and BLM-designated open routes to gain access to the project site during construction, maintenance and decommissioning activities. Refer to Chapter 2, Description of Proposed Action and Alternatives, for a list of all anticipated access and maintenance roads and routes. Modifications to some existing roads, including grading and/or widening, may be required.

Intersections

As discussed in Section 3.16, the three major intersections in the traffic analysis area all operate at LOS A in both the a.m. and p.m. peak hours. For the analysis of impacts to intersections during construction, the peak-hour construction vehicle trips (as shown in Table 4.16-2) were added to the existing intersection traffic volumes and LOS for the study area intersections were calculated. The resulting LOS under the existing plus construction traffic scenario for study area intersections are shown in Table 4.16-4.

Table 4.16-4. Existing Plus Project Construction Intersection LOS

	AM Peak Hour		PM Peak Hour	
Intersection	**Delay**	**LOS**	**Delay**	**LOS**
Yates Well Road–Sweet Bay Drive/Silverton Road	11.9 sec	B	12.5 sec	B
I-15 southbound ramp/Yates Well Road	11.0 sec	B	8.5 sec	A
I-15 northbound ramp/Yates Well Road	9.1 sec	A	16.7 sec	C

Source: First Solar 2011

I-15 = Interstate 15

LOS = level of service

Sec = seconds

As noted in Table 4.16-4, the three traffic analysis area intersections would operate with a LOS C or better under existing plus project construction conditions.

Freeway Segments

The LOS for the I-15 during construction of the project was calculated by adding the construction vehicle trips to the existing I-15 traffic volumes. The results of the existing plus project construction traffic analysis for the I-15 segment serving the project site are shown in Table 4.16-5.

Table 4.16-5. Existing Plus Project Construction Freeway LOS

	Peak Northbound Volume Traffic	Density	LOS
Weekday	2,526 vehicles	21.3 pc/mi/ln	C
Friday	4,104 vehicles	>45 pc/mi/ln	F

Source: First Solar 2011

LOS = level of service

pc/mi/ln = passenger cars per mile per lane

As shown in Table 4.16-5, the northbound segment of I-15 in the traffic analysis area would continue to operate at satisfactory LOS C during peak hour traffic Monday through Thursday. The northbound segment of I-15, which operates at LOS E during Friday peak hour traffic under existing conditions, would degrade to an LOS F under existing plus project traffic conditions during the Friday peak hour.

Public Access

Construction of the Proposed Action may temporarily interfere with public access in the project area. Public access such as existing recreational activities could be temporarily disrupted since access to the site and off-highway vehicle (OHV) routes may be restricted during construction.

The patrons of the Primm Valley Golf Club and the residents who reside at the Yates Well Road/I-15 Interchange would not be subjected to substantial intersection delays as a result of construction activities associated with the Proposed Action.

Mitigation measure MM-Trans-1 would require the Applicant to minimize the disturbance of existing land uses and to coordinate with the owners to determine an acceptable solution and fund any necessary avoidance measures or modifications.

Operation and Maintenance

The proposed facility would have a maximum full-time on-site work force of 12 workers. As a result, the project would generate approximately 24 average daily trips, with 12 trips during the a.m. and 12 trips during p.m. peak hours, which is approximately 3 percent of the 880 daily trips generated during constructions. The traffic generated by the project during operation would not adversely affect traffic operations on the I-15 or surrounding local roadways and intersections. As previously discussed, it is possible that some truck trips to and from the site would occur when the replacement of onsite equipment is needed. However, operation of the project would not require regularly scheduled truck trips.

Decommissioning

The project would be in operation for a period of 30 years. Once operation of the project ceases, the onsite equipment would be recycled to the extent feasible. The decommissioning of the project would be similar to the construction activities described earlier, and would include demolition and removal of above-ground and subsurface facilities and site contouring and restoration. Onsite equipment and materials that cannot be recycled would be disposed of safely. The duration of decommissioning would be shorter than the duration of construction. The project site could then be utilized by other uses that conform to applicable land use regulations that are in effect at the time of closure. The overall duration of decommissioning activities is expected to be shorter than construction of the project. It is anticipated that decommissioning of the Stateline Solar Farm Project would require *the same number of* truck trips and employees than construction of the project*, and therefore* vehicle trips associated with decommissioning would have the same effects to intersection and freeway LOS and public access as those which would occur during construction.

Modify Boundary of Ivanpah DWMA

Modification of the Ivanpah DWMA boundary would not be expected to generate additional vehicle trips. Modification of the DWMA boundary may restrict public access to sensitive habitat areas within portions of the DWMA.

4.16.3.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) are presented below based on the CEQA Significance Criteria presented in Section 4.10.2. Only those significance criteria which were determined in Section 4.10.2 to be relevant to the project are addressed below:

Trans-1

A significant impact would occur if the increase in project traffic causes any intersection to operate at LOS D or worse condition during the a.m. or p.m. peak hours. Based on the analysis presented above, the LOS of study area intersections would not change substantially and they would not operate at LOS D or worse during construction, operation or decommissioning. The three intersections change LOS levels from LOS A to LOS B or C as a result of temporary construction activities; therefore, impacts are considered less than significant.

Mitigation measure MM-Trans-1 requires the Applicant to expand and improve their existing Traffic Management Plan. This would require the Applicant to consult with jurisdictional agencies to develop a strategy to assure safe and effective passage of through-traffic during construction activities.

Trans-2

A significant impact would occur if the increase in project traffic on I-15 causes the LOS of a segment to degrade to below LOS E. The I-15 segment serving the site currently operates at LOS C during peak traffic volumes on Monday through Thursday and LOS E during peak volumes on Friday. Based on the analysis presented above, construction traffic and decommissioning traffic would cause the LOS on Friday during peak traffic volume to degrade to LOS F. This would constitute a significant impact. Mitigation measures MM-Trans-1 and MM-Trans-2 would reduce the impact and the impact would be temporary; however, it would remain significant and unavoidable.

Impacts to freeway segments during operation would be less than significant.

Trans-4

A significant impact would occur if the project results in an increase in transportation hazards due to a design feature. The project would not result in an increase in hazards due to a design feature. Project construction would not involve any roadway design elements except for entrances to the project site. Construction-related truck traffic and decommissioning-related truck traffic could potentially obstruct traffic on local public streets; however, with implementation of *the* traffic management plan as required by BLM, adequate sight distance would be ensured at these access driveways for trucks to exit the project site without obstructing traffic on public streets. Therefore, impacts would be less than significant. No impact would occur with respect traffic generated during construction and operation of the project.

Trans-5

With implementation of *their* traffic management plan as required by BLM, adequate emergency access would be maintained during project construction and decommissioning. In addition, mitigation measure MM-Trans-1, which requires implementation of *the* Traffic Management Plan, would ensure that emergency access impacts would be less than significant.

Trans-6

Adequate parking would be provided for construction equipment and employees; therefore, impacts would be less than significant.

Trans-7

The project would not conflict with any adopted policies, plans, or programs supporting alternative transportation. No impact would occur.

4.16.4 Alternative 2: 2,385 Ac Alternative

4.16.4.1 Direct and Indirect Impacts

Alternative 2 would occupy two separate parcels north and south of the existing transmission corridor. The Solar Farm site, gen-tie corridor, and access corridor under Alternative 2 would require approximately 2,385 acres of land managed by the BLM, which is 242 acres (or about 12 percent) more than the Proposed Action. Alternative 2 would utilize the same materials and equipment as the Proposed Action. Therefore, the intensity of traffic per day would be basically the same as in the Proposed Action. However, due to the larger project site under this alternative, the duration of construction-generated traffic may be incrementally longer.

Effects on the existing transportation system may arise from construction, operations and maintenance, and decommissioning equipment and vehicles.

Construction

Intersection

As concluded in the intersection analysis for the Proposed Action, no adverse impacts were identified for Alternative 2, which is forecasted to generate equal traffic as the Proposed Action. Note, however, that the duration of construction impacts to roadways may be incrementally longer under Alternative 2 due to the larger site compared to the Proposed Action.

Freeway Segment

Similar to the Proposed Action, construction of Alternative 2 would temporarily cause the I-15 freeway segment to degrade from LOS E to LOS F during Friday peak traffic. However, this impact would be expected to occur for an incrementally longer period of time under Alternative 2 due to the larger size of the site.

Public Access

As with the Proposed Action, construction of Alternative 2 would temporarily interfere with public access in the project area. This impact would be expected to occur for an incrementally longer period of time under Alternative 2 due to the larger size of the site. Mitigation measure MM-Trans-1 would apply to this alternative.

Operation and Maintenance

Similar to the Proposed Action, the project would have no adverse impacts at any of the study area intersections or segments during operation. No adverse effects to public access would occur during operation.

Decommissioning

As with the Proposed Action, it is assumed that vehicle trips associated with decommissioning would have the same effects to intersection and freeway LOS and public access as those which would occur during construction. However, this impact would be expected to occur for an incrementally longer period of time under Alternative 2 due to the larger size of the site.

Modify Boundary of Ivanpah DWMA

As with the Proposed Action, modification of the Ivanpah DWMA boundary under Alternative 2 would not be expected to generate additional vehicle trips. Modification of the DWMA boundary may restrict public access to sensitive habitat areas within portions of the DWMA.

4.16.4.2 CEQA Significance Determinations

The CEQA significance determinations for the Proposed Action identified above in Section 4.16.3.2 would apply to the impacts associated with construction, operation and decommissioning under Alternative 2. Under Alternative 2, the duration of construction and decommissioning activities and associated impacts to transportation facilities may be incrementally longer than the Proposed Action due to the larger size of the project site of Alternative 2.

4.16.5 *Revised* Alternative 3: *1,685* Ac Alternative

4.16.5.1 Direct and Indirect Impacts

Revised Alternative 3 would occupy approximately *1,685* acres in a contiguous project footprint in the northeastern portion of the project study area. The project site under *Revised* Alternative 3 is *458 acres smaller* than the project site under the Proposed Action. *Revised* Alternative 3 would utilize the same materials and equipment as the Proposed Action. Therefore, the intensity of traffic per day would be basically the same as in the Proposed Action.

Effects on the existing transportation system may arise from construction, operations and maintenance, and decommissioning equipment and vehicles.

Construction

Intersection

As concluded in the intersection analysis for the Proposed Action, no adverse impacts were identified for *Revised* Alternative 3, which is forecasted to generate equal traffic as the Proposed Action.

Freeway Segment

Similar to the Proposed Action, construction of *Revised* Alternative 3 would temporarily cause the I-15 freeway segment to degrade from LOS E to LOS F during Friday peak traffic.

Public Access

As with the Proposed Action, construction of *Revised* Alternative 3 may temporarily interfere with public access in the project area. Mitigation measure MM-Trans-1 would apply to this alternative.

Operation and Maintenance

Similar to the Proposed Action, the project would have no adverse impacts at any of the study area intersections or segments during operation. No adverse effects to public access would occur during operation.

Decommissioning

As with the Proposed Action, it is assumed that vehicle trips associated with decommissioning would have the same effects to intersection and freeway LOS and public access as those which would occur during construction.

Modify Boundary of Ivanpah DWMA

As with the Proposed Action, modification of the Ivanpah DWMA boundary under *Revised* Alternative 3 would not be expected to generate additional vehicle trips. Modification of the DWMA boundary may restrict public access to sensitive habitat areas within portions of the DWMA.

4.16.5.2 CEQA Significance Determinations

The CEQA significance determinations for the Proposed Action identified above in Section 4.16.3.2 would apply to the impacts associated with construction, operation and decommissioning under *Revised* Alternative 3.

4.16.6 Alternative 4: Reduced Acreage Alternative

4.16.6.1 Direct and Indirect Impacts

Alternative 4 is conceptually similar to the Proposed Action (Alternative 1), but would be placed within a different land area which comprises 1,766 acres. The land area associated with Alternative 4 would be the same as the northern portion of the bifurcated footprint of Alternative

2. Alternative 4 would utilize the same materials and equipment as the Proposed Action. Therefore, the intensity of traffic per day would be basically the same as in the Proposed Action. However, due to the small project site under this alternative, the duration of construction-generated traffic may be incrementally shorter.

Effects on the existing transportation system may arise from construction, operations and maintenance, and decommissioning equipment and vehicles.

Construction

Intersection

As concluded in the intersection analysis for the Proposed Action, no adverse impacts were identified. Therefore, no adverse impacts would occur during the construction of Alternative 4, which is forecasted to generate equal traffic as the Proposed Action. Note, however, that the duration of construction impacts to roadways may be incrementally shorter under Alternative 4 due to the smaller site compared to the Proposed Action.

Freeway Segment

Similar to the Proposed Action, construction of Alternative 4 would temporarily cause the I-15 freeway segment to degrade from LOS E to LOS F during Friday peak traffic. However, this impact would be expected to occur for an incrementally shorter period of time under Alternative 4 due to the smaller size of the project site.

Public Access

As with the Proposed Action, construction of Alternative 4 may temporarily interfere with public access in the project area. This impact would be expected to occur for an incrementally shorter period of time under Alternative 4 due to the smaller size of the site. Mitigation measure MM-Trans-1 would apply to this alternative.

Operation and Maintenance

Similar to the Proposed Action, the project would have no adverse impacts at any of the study area intersections or segments during operation. No adverse effects to public access would occur during operation.

Decommissioning

As with the Proposed Action, it is assumed that vehicle trips associated with decommissioning would have the same effects to intersection and freeway LOS and public access as those which would occur during construction. However, this impact would be expected to occur for an incrementally shorter period of time under Alternative 4 due to the smaller size of the site.

Modify Boundary of Ivanpah DWMA

As with the Proposed Action, modification of the Ivanpah DWMA boundary under Alternative 4 would not be expected to generate additional vehicle trips. Modification of the DWMA boundary may restrict public access to sensitive habitat areas within portions of the DWMA.

4.16.6.2 CEQA Significance Determinations

The CEQA significance determinations for the Proposed Action identified above in Section 4.16.3.2 would apply to the impacts associated with construction, operation and decommissioning under Alternative 4. Under Alternative 4, the duration of construction and decommissioning activities and associated impacts to transportation facilities may be incrementally shorter than the Proposed Action due to the smaller size of the project site of Alternative 4. However, Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

4.16.7 Alternative 5: No Action Alternative

4.16.7.1 Direct and Indirect Impacts

The No Action Alternative would leave the project site vacant. This alternative would not involve any construction, delivery, operations, maintenance, or decommissioning activities. The Associated Management Actions would also not occur under this alternative. Therefore, there would be no increase in traffic or change to transportation facilities compared to current conditions.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under the No Action Alternative. Land uses associated with the Ivanpah DWMA would continue as they are today. Because this action would not be taken, there would be no impacts to traffic.

4.16.7.2 CEQA Significance Determinations

The less than significant impacts and significant impacts identified for the Proposed Action would not occur under Alternative 5. No adverse impacts related to transportation would occur.

4.16.8 Alternative 6: No Project, Exclude Solar Alternative

4.16.8.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. This alternative would not involve any construction, delivery, operations, maintenance, or decommissioning activities. Therefore, there would be no increase in traffic or change to transportation facilities compared to current conditions.

Modify Boundary of Ivanpah DWMA

As with the Proposed Action, modification of the Ivanpah DWMA boundary under Alternative 6 would not be expected to generate additional vehicle trips. Modification of the DWMA boundary may restrict public access to sensitive habitat areas within portions of the DWMA.

4.16.8.2 CEQA Significance Determinations

The less than significant impacts and significant impacts identified for the Proposed Action would not occur under Alternative 6. No impacts related to transportation or public access would occur.

4.16.9 Alternative 7: No Project, Approve Solar Alternative

4.16.9.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The Stateline Solar Farm Project would not be constructed on the project site and the project site would remain vacant in the near-term. Under this alternative, the BLM would not approve the proposed facility, but would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the site.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 7. Land uses associated with the Ivanpah DWMA would continue as they are today. If a solar or other renewable energy facility is proposed on the site in the future, the impact on transportation and public access would be considered in a project-specific environmental analysis that would occur at that time.

4.16.9.2 CEQA Significance Determinations

The impacts identified for the Proposed Action would not occur under Alternative 8. No impacts related to transportation or public access would occur.

4.16.10 Cumulative Impacts

4.16.10.1 Geographic Extent/Context

For the purposes of the cumulative analysis of transportation and access impacts, only other projects that make a substantial contribution to traffic at the same intersections and street segments as the Proposed Action are considered. Because the volume of traffic generated during construction would not be particularly large and would be substantially less during operation, only intersections and freeway segments in close proximity to the Project site would experience any appreciable increase in traffic. Therefore, the study area for cumulative impacts consists of the immediate vicinity of the Project site where other projects might contribute traffic to the same intersections and street segments.

4.16.10.2 Existing Cumulative Conditions

Substantial regional traffic passes through the State line area on I-15, which connects the Southern California area with Las Vegas, Nevada. Existing traffic on local roadways is substantially less than I-15, as described in Section 3.16. A wide variety of activities and development contribute to the current cumulative conditions for transportation and public access in the project area, including recreational activities; mining; solar development; electric utilities, natural gas, petroleum products and communications; and farming. Specific existing land uses in the immediate vicinity of the project site that contribute to existing traffic volumes

and limitations to public access include the I-15 freeway corridor, the Primm Resorts, the Union Pacific railway, and the Walter Higgins Generating Station. These types of past and ongoing projects and activities would combine with traffic generated by the Proposed Action or an alternative to affect transportation and public access within the vicinity of the Project site.

Intersections in the project area generally operate at acceptable LOS. Likewise, the I-15 freeway segment within the Ivanpah Valley operates at an acceptable LOS, with the exception peak traffic on Friday afternoons when the LOS degrades to levels below LOS E.

Existing cumulative conditions also include traffic generated by the current construction activities associated with the Ivanpah SEGS solar facility (3,471 acres), the EITP, and expansion of the Molycorp rare earths mine. Construction of these projects adds additional vehicles on the I-15 and local roadways, including the I-15, the Yates Well Road/I-15 interchanges, and Yates Well Road.

4.16.10.3 Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects, various BLM authorized actions/activities, proposed or approved projects within the County's jurisdiction, and other actions/activities that the agencies consider reasonably foreseeable. Table 4.1-2 summarizes the cumulative projects that would have the potential to combine with the Proposed Action and result in cumulative impacts to transportation and access. Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA, or will do so prior to approval. Even if environmental review has not been completed for the cumulative projects described in Table 4.1-2, their effects were considered in the cumulative impacts analysis in the *PA and* EIS/EIR.

Projects currently under construction in the vicinity of the proposed facility include the Ivanpah SEGS solar facility (3,471 acres). Proposed projects in the vicinity of the proposed facility that would have potentially adverse impacts to transportation and traffic include the Ivanpah SEGS solar facility, the EITP, expansion of Molycorp Mine, the Southern Nevada Supplemental Airport, Desert Xpress high speed passenger rail line, Silver State Phase 2 solar facility, and the Calnev Pipeline Expansion Project.

4.16.10.4 Cumulative Impacts associated with Proposed Action

Construction

The projects currently under construction in the project area may limit public access to BLM land and temporarily affect transportation facilities during construction. If construction of the Proposed Action or one of its alternatives overlaps with existing construction activities currently underway, temporary cumulative impacts to transportation and access could occur.

The Desert Xpress project has been approved, but has been put on hold. In addition, the Southern Nevada Supplemental Airport Project is currently on hold. As such, it is anticipated that construction of both of these projects would not occur until construction of the Proposed Action or one of its alternatives is completed.

Construction of the Proposed Action or one of its alternatives would commence in March 2013 and could last through March 2017. Construction activities for the Ivanpah SEGS solar facility, are currently in progress and anticipated to last throughout the Stateline Solar Farm Project construction phase. Construction of the Calnev Pipeline Expansion, JPOE, and Silver State Phase 2 *are* expected to start in late *2013 or early 2014*. Note, however, that the JPOE project will be very small and short-duration, and the Calnev and Mountain Pass Lateral projects are

both linear pipeline projects that will pass through the project area relatively quickly; consequently, these projects would not substantially contribute to cumulative impacts to transportation and access. Therefore, it is assumed that the Ivanpah ISEGS facility, EITP, Molycorp Phoenix mine expansion, the Silver State Phase 2 project could occur throughout the 2-4 year construction phase of Proposed Action or one of its alternatives.

It is anticipated that the concurrent construction of all of the aforementioned projects would require approximately 2,000 to 4,000 construction workers. Construction worker vehicle trips to and from the project sites, along with the delivery of materials and equipment by truck would temporarily increase traffic volumes on roadways and at intersections. All of the construction vehicle trips associated with these projects would use the I-15. As previously discussed, the northbound I-15 currently operates at an LOS E during Friday afternoon peak traffic and construction traffic from the Proposed Action would cause it to degrade to LOS F. Traffic from the concurrent construction of projects in the area would exacerbate the LOS F condition.

Construction vehicles currently access the Ivanpah SEGS solar facility and the EITP via Yates Well Road from the I-15. Therefore, the concurrent construction of Ivanpah SEGS solar facility the EITP and the Proposed Action would add construction vehicle trips to the I-15 southbound ramp/Yates Well Road intersection and the I-15 northbound ramp/Yates Well Road intersection. The estimated 2,000 to 4,000 construction workers associated with the concurrently construction of the cumulative projects could cause the intersections to operate at unacceptable LOS during peak morning and afternoon commuting times.

Operation and Maintenance

As discussed above, the Southern Nevada Supplemental Airport and Desert Xpress projects have been put on hold. If these projects are constructed, they would improve transportation facilities in the area by providing expanded airport facilities and introducing passenger rail travel to the area, an option that is currently not available. Operation of the Southern Nevada Supplemental Airport may incrementally increase traffic on I-15 at certain times; however, it is anticipated that the majority of traffic would occur on the I-15 between Primm and Las Vegas Nevada. Conversely, the Southern Nevada Supplemental Airport may incrementally decrease traffic if people choose to travel by airplane instead of automobile. Similarly, the Desert Xpress may incrementally decrease traffic on the I-15 by providing an alternative transportation option to people who would otherwise travel via automobile between the Los Angeles, California and Las Vegas, Nevada areas.

The JPOE would include an Agricultural Inspection Facility and a Commercial Vehicle Enforcement Facility located on the north side of I-15 between Nipton Road and Yates Well Road. Operational trips associated with the JPOE would include employee trips and occasional delivery trips. The vehicles traveling along I-15 may be required to stop at the JPOE however; these would be “pass-by” trips, which do not constitute new vehicle trips.

The Calnev and Mountain Pass Lateral projects are both linear pipeline projects. With the exception of vehicle trips associated with occasional maintenance of the pipelines, operation of these two pipeline projects would not generate traffic or adversely affect public access to public lands.

It is expected that all of the cumulative projects described above would be operational at the same time as the Proposed Action. Operation of the proposed facility and the other cumulative projects would cause a minor increase in traffic along local roadways, including I-15, which would have the potential to combine with traffic generated by other projects in the area. Cumulative operational traffic would exacerbate the existing LOS E condition of the northbound I-15 during Friday peak traffic and would cause the LOS E to degrade to LOS F.

The three intersections analyzed for the Proposed Action are projected to operate at LOS C or better under the existing plus project scenario (refer to Table 4.16-4). Therefore, given that traffic from operation of the cumulative projects would be substantially less than construction traffic, cumulative traffic impacts are not anticipated.

The replacement of undeveloped BLM land with the cumulative projects would reduce the amount of publicly accessible BLM land and may result in an incremental decrease in existing unmaintained public roads used for recreational purposes.

Decommissioning

The decommissioning of the Proposed Action is expected to result in adverse impacts similar to those identified for construction. Disruptions from the decommissioning activities associated with other renewable energy and other projects would have the potential to combine with those of the Proposed Action, which could result in an adverse cumulative impact. However, the Proposed Action's contribution to cumulative transportation and access impacts during decommissioning would be temporary. Following decommissioning, no further project-related activities would occur, and adverse impacts would cease.

Modify Boundary of Ivanpah DWMA

Modification of the Ivanpah DWMA boundary would not be expected to generate additional vehicle trips. Modification of the DWMA boundary may restrict public access to sensitive habitat areas and limit OHV use within all or portions of the DWMA. This action could combine with other similar actions in the region, including renewable energy projects and other management actions taken for resource protection, to further restrict public access to public lands, thus contributing to a cumulative impact to public access.

4.16.10.5 CEQA Significance Determinations

Trans-1

Under Trans-1, a significant impact would occur if the increase in project traffic causes any intersection to operate at LOS D or worse condition during the a.m. or p.m. peak hours. The three intersections change LOS levels from LOS A to LOS B or C as a result of temporary construction activities caused by the Proposed Action or one the alternatives; therefore, impacts from the Proposed Action are considered less than significant. Traffic from cumulative projects would increase traffic at study area intersections. During the concurrent construction and decommissioning of projects, the LOS of study area intersections could degrade to LOS D or worse, which would constitute and cumulative impact. These impacts would be temporary, and would be reduced and eventually cease as construction on each of the projects was completed.

Implementation of mitigation measure MM-Trans-1 would reduce the contribution of the Proposed Action and other action alternatives to this condition. With implementation of mitigation measure MM-Trans-1, the project's contribution to the cumulative impact would not be cumulatively considerable.

It is anticipated that traffic from operation of cumulative projects in combination with the Proposed Action would not cause a significant cumulative impact to the LOS of intersections.

Trans-2

Under Trans-2, a significant impact would occur if the increase in project traffic on I-15 causes the LOS of a segment to degrade to below LOS E. Construction and decommissioning traffic of the Proposed Action alone would cause a significant impact to the I-15 LOS during Friday afternoon peak traffic in the northbound direction. Construction traffic and decommissioning traffic from cumulative projects would exacerbate this condition, thereby resulting in a significant cumulative impact. Mitigation measures MM-Trans-1 and MM-Trans-2 would reduce the contribution of the Proposed Action; however, the Proposed Action's contribution to the cumulative impact would remain cumulatively considerable and unavoidable.

Impacts to freeway segments during operation of the Proposed Action would be less than significant. However, cumulative operational traffic could exacerbate the existing LOS E condition of the northbound I-5 during Friday peak traffic and could cause the LOS E to degrade to LOS F. However, with implementation of mitigation measure MM-Trans-1, the project's contribution to the cumulative impact would not be cumulatively considerable.

Trans-4

Under Trans-4, a significant impact would occur if the project results in an increase in transportation hazards due to a design feature. With implementation of *the* traffic management plan as required by BLM, adequate sight distance would be ensured at these access driveways for trucks to exit the project site without obstructing traffic on public streets. Cumulative projects would be required to prepare similar traffic management plans. Therefore, cumulative impacts would be less than significant.

Trans-5

With implementation of Trans-1, adequate emergency access would be maintained during project construction and the project would not contribute to cumulative impacts related to emergency access.

Trans-6

Adequate parking would be provided for construction equipment and employees; therefore, the project would not contribute to cumulative parking impacts.

Trans-7

The project would not conflict with any adopted policies, plans, or programs supporting alternative transportation. No cumulative impact would occur.

4.16.10.6 Alternatives

Alternative 2: 2,385 Ac Alternative

The transportation and access impacts associated with Alternative 2 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with Alternative 2 would be the same as those described above for the Proposed Action.

Revised **Alternative 3: *1,685* Ac Alternative**

The transportation and access impacts associated with *Revised* Alternative 3 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with *Revised* Alternative 3 would be the same as those described above for the Proposed Action.

Alternative 4: Reduced Acreage Alternative

The transportation and access impacts associated with Alternative 4 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with Alternative 4 would be the same as those described above for the Proposed Action.

Alternative 5: No Action Alternative

Alternative 5, the No Action Alternative, would not contribute to transportation or access impacts. Therefore, this alternative would not contribute to cumulative transportation or access impacts.

Alternative 6: No Project, Exclude Solar Alternative

By denying the solar energy application and excluding the site from future solar energy development, Alternative 6 would not contribute to cumulative transportation or access impacts.

Alternative 7: No Project, Approve Solar Alternative

By denying the solar energy application, Alternative 7 would not contribute to cumulative transportation or access impacts. The site could potentially be used for solar or other development in the future. Transportation or access impacts associated with future actions would be considered in a later project-specific environmental analysis.

4.16.11 Mitigation Measures

Transportation impacts would be reduced by implementation of the following mitigation measures. Even with mitigation, the freeway segment impact that would occur on the I-15 from vehicle trips during construction and decommissioning is likely to remain significant under CEQA, but for a short duration. This impact would also be considered to be residual effects under NEPA.

MM-Trans-1: Traffic Control Plan. The Applicant shall implement their Traffic Control Plan (First Solar 2012e) for locations along the route where local agencies (e.g., traffic engineering, public works, etc.) identify construction activities that would adversely impact the existing transportation system. Where requested by public agencies, the use of flaggers, warning signs, lights, barricades, cones, etc. will be implemented according to standard guidelines required by the affected jurisdiction. The Applicant shall ensure that the following measures are addressed in the Traffic Control Plan:

- The Applicant will ensure that truck traffic is scheduled for off-peak hours to reduce impacts to public roads during periods of peak traffic periods;

- The Applicant will clearly identify truck routes to be used for ingress and egress from the project site;
- Where lane closures are required, the Applicant will comply with BMPs established by the Work Area Protection and Traffic Control Manual (California Joint Utility Traffic Control Committee 1996);
- The Traffic Control Plan will identify traffic control measures, such as flag men, that will be implemented to ensure the safe operation of construction equipment accessing the site;
- The Traffic Control Plan will include a section that describes measures to encourage employees to carpool in order to reduce the number of trips to and from the work site;
- The Applicant will ensure that signs and public notices about work are distributed one week before disruptions occur, identifying detours to maintain access, the use of flagmen or escort vehicles to control and direct traffic flow, and scheduling roadway work during periods of minimum traffic flow. Notices will be posted along the construction ROW fronting Yates Well Road and Silverton Road as required by local agencies (e.g., traffic engineering, public works, etc.) that show the duration of construction activities within each roadway (e.g., which lane(s) would be blocked, at what times of day, and on what dates) at least one week in advance of construction.
- The Applicant will coordinate with emergency service when drafting the Traffic Control Plan to avoid restricting movements of emergency vehicles. Police departments, fire departments, ambulance services, and paramedic services will be notified at least three days in advance by the Applicant of the proposed locations, nature, timing, and duration of any construction activities and advised of any access restrictions that could impact their effectiveness. At locations where access to nearby property is blocked, provisions would be ready at all times to accommodate emergency vehicles, such as plating over excavations, short detours, and alternate routes.
- The Traffic Control Plan will detail the requirements of local agencies (e.g., traffic engineering, public works, etc.) regarding lane closures. The Applicant will restrict lane closures or obstructions on arterial and collector roadways to off-peak period in urbanized areas to mitigate traffic congestion and delays that would be caused by lane closures during construction. Such closures will be directed by the affected public jurisdiction depending on specific site conditions.
- When working in or near existing roads and open routes, the Applicant will ensure that the construction contractor maintains all equipment within work areas designated by the traffic control devices. The Applicant will also ensure that the construction contractor properly loads equipment onto appropriate trucks and trailers for transport to other work sites; the contractor(s) will not be allowed to use active roadways to relocate construction equipment that are not licensed for use on public roads.
- The Applicant will coordinate in advance with public transit agencies to avoid disruption to transit operations. Public transit agencies that operate bus routes on the roadways potentially affected by the proposed construction activities will be informed in advance of construction and the potential impacts at bus stop locations. Alternate pickup/drop-off locations will be determined and signed appropriately.
- The Applicant will notify Federal Interagency Communications Commission for San Bernardino County to coordinate access to remote areas, and ensure that proper emergency response personnel are aware of the project.

- The Applicant will coordinate with emergency service providers in advance of construction to avoid restricting movements of emergency vehicles. Police departments, fire departments, ambulance services, and paramedic services would be notified at least three days in advance by the Applicant of the proposed locations, nature, timing, and duration of any construction activities and advised of any access restrictions that could impact their effectiveness. In urban areas, the Applicant will consult with local emergency responders to establish a mutually agreeable amount of open trench. Limiting the amount of open trench will reduce detours, and ensure emergency access routes are maintained. At locations where access to nearby property is blocked, provisions would be ready at all times to accommodate emergency vehicles, such as plating over excavations, short detours, and alternate routes.
- Prior to finalizing construction plans, the Applicant will work with each jurisdiction to identify land uses along the ROW with access concerns. The Applicant will develop construction schedule that to provide reasonable access to businesses (i.e., Primm Valley Golf Club), institutions, or residential areas. This may include scheduling construction to avoid certain holidays, hours, or days of the week and/or avoiding peak traffic times adjacent to residential areas. If construction activities result in closing the primary access to these areas, the Applicant will make alternative access provisions (signed/marked appropriately). In addition, the Applicant will ensure that at least one access driveway is left unblocked during business hours or hours of use. Where construction activities interfere with access to local businesses and/or residents, property owners would be notified of the potential obstructions.

Mitigation measure MM-Trans-1 would lessen potential impacts to emergency response or public vehicles. With the implementation of these measures, access for emergency responders would be maintained during the construction period, and detours and alternate routes would be coordinated in advance of construction activity. Emergency response providers near the project area would be notified, at least three days in advance, about the exact location of construction, road or route closure schedules, and location of potential alternate routes. Work would be coordinated with local police and traffic engineers to plan appropriate access alternatives for temporary street closures and traffic disruption. Directly affected businesses and residents would be given ample notice and information to plan alternatives, and signage would be provided to direct motorists to alternate routes. Traffic control requirements from municipalities would also be followed. These measures would reduce the impacts to less than significant under CEQA.

MM-Trans-2: Northbound Truck Trips on Friday Afternoon. The construction and decommissioning contractor shall not schedule any truck trips to or from the Stateline Solar Farm Project site after 3:00 p.m. on Fridays to avoid impacts to I-15 mainline traffic LOS.

This mitigation measure (MM-Trans-2) is recommended by the Applicant. Mitigation measure MM-Trans-2 would reduce impacts associated with the degradation of the LOS on the I-15 during construction and decommissioning activities. While implementation of this measure is expected to reduce impacts, impacts to I-15 LOS on Friday during peak traffic volumes would remain significant.

MM-Trans-3: Restoration of Roads. Public Roads damaged by construction activities shall be restored to their pre-construction condition as required by applicable local agency or federal requirement. *The applicant shall enter into a maintenance agreement (prior to issuance of grading permits) with the Department of Public Works, Transportation Operations Division to*

insure all County maintained roads utilized by the construction traffic shall remain in acceptable condition during construction.

Prior to occupancy/final inspection, the developer shall comply with the maintenance agreement during construction if applicable and/or assure that all County maintained roads affected by the project during construction shall be restored to pre-construction condition.

If damage that occurred were not corrected, this would be a direct, adverse impact that would be *long-term*. To reduce the impact, implementation of mitigation measure MM-Trans-3 would ensure that any adverse impacts are temporary.

4.16.12 Residual Impacts After Mitigation

The temporary impact to the I-15 Friday peak traffic LOS during construction and decommissioning would be reduced with implementation of mitigation measures MM-Trans-1 and MM-Trans-2. However, even with implementation of the mitigation measures, traffic from construction and decommissioning could cause the LOS to degrade from E to F. Therefore, traffic from construction and decommissioning activities on the I-15 during Friday peak traffic volumes would constitute a temporary unavoidable adverse impact. No mitigation is available to eliminate this impact without severely limiting vehicle trips to and from the project site on Fridays during construction and decommissioning. By setting limits on the number of vehicles trips on Fridays, the overall duration of construction and decommissioning activities would be prolonged. Prolonging construction and decommissioning activities could be considered a secondary adverse impact.

4.17 Vegetation Resources

4.17.1 Methodology for Analysis

Impacts to vegetation resources are classified as direct or indirect. Direct impacts are those caused by an action and that occurs at the same time and place (for example, removal of vegetation through grubbing or grading; [40 CFR 1508.8(a)]). Indirect impacts are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable (e.g., fugitive dust from grading can settle on remaining vegetation and degrade the health of the vegetation over time; [40 CFR 1508.8(b)).

Impact analyses also characterize effects to vegetation resources as temporary or *long-term*, with a *long-term* impact referring to areas that are paved or otherwise precluded from restoration, and a temporary impact referring to areas that can be restored to a pre-project state. It should be noted that some temporary impact areas may be considered *long-term* impacts if the revegetation criteria described below are not met.

4.17.2 CEQA Significance Criteria

The indicators listed below were used to determine if the proposed Stateline Solar Farm facility would result in significant impacts under CEQA to vegetation resources. These indicators are the same as the significance criteria for vegetation listed in the CEQA Environmental Checklist, Appendix G of the CEQA Guidelines. The Proposed Action or its alternatives would result in an adverse impact on vegetation if they would:

- Veg-1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife (CDFW) or the USFWS;
- Veg-2: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in either local or regional plans, policies or regulations, or by the CDFW or USFWS;
- Veg-3: Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Veg-4: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and
- Veg-5: Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Of these criteria, the following were determined to be inapplicable or to result in no impact under all alternatives and, therefore, these criteria are not discussed further in this section:

Veg-3: The proposed facility would not have a substantial adverse effect on any federally protected wetlands; no wetland or riparian areas exist within the project footprint.

Veg-4: The proposed facility would not conflict with any local policies or ordinances protecting biological resources; therefore, there would be no impact under the Veg-4 criterion.

Veg-5: The proposed facility would not be located within the boundaries of an existing habitat conservation plan, natural community conservation plan, or any other approved local, regional,

or state habitat conservation plan. Therefore, there would be no impact under the Veg-5 criterion.

4.17.3 Alternative 1: Proposed Action

Based on the scope of the Proposed Action, and the *location where* the project would be implemented, the following potential impacts to vegetation have been identified for evaluation:

- *Long-term* disturbance of approximately 2,023 acres of creosote bush and mixed saltbush scrub vegetation.
- Temporary disturbance of approximately 4 acres of creosote bush and mixed saltbush scrub vegetation.
- Potential propagation of invasive and noxious weed species.
- Disturbance of *state* jurisdictional *waters*.

Clearing, tilling, and other ground-disturbing activities associated with construction of the *Project's* infrastructure would cause the direct loss of vegetation resources within the project footprint. All vegetation located within the project's perimeter fence would *experience long-term impacts* as a result of site preparation activities (clearing, tilling, and drum rolling). Vegetation located within the project footprint, including equipment and material staging areas, parking areas, as well as the free space within the solar arrays would also be impacted by the project *for the long-term*. The only temporary impacts expected to result from the Proposed Action would be impacts to 4 acres of vegetated area during construction of the transmission ROW.

The Applicant has prepared and would implement the following plans for construction, operations, and decommissioning activities:

Vegetation Management Plan (First Solar 2012f) specifies measures to minimize adverse impacts to native vegetation and special status plant species. The *Vegetation Management* Plan includes measures to minimize the area to be graded, and place facility infrastructure in a manner which avoids resources. For resources that cannot be avoided, the Plan defines measures to transplant and/or restore disturbed areas. The Plan includes measures to salvage and transplant succulents such as yucca and cactus species, use salvaged topsoil and native seed to immediately restore temporarily disturbed areas, and identify timing and methods for revegetation efforts.

***Integrated* Weed Management Plan** (First Solar *2013c*) defines procedures to minimize the potential for propagation of noxious and invasive weeds due to project construction, operation, and decommissioning. This Plan includes the measures to be taken by the Applicant:

- The Applicant would follow BLM's Herbicide Use Standard Operating Procedures provided in Appendix B of the Record of Decision for the Final Vegetation Treatments Using Herbicides Programmatic Environmental Impact Statement (BLM 2007).
- Mowing would only be used as necessary to maintain the height of vegetation so that solar modules are not shaded.
- Preconstruction surveys would be conducted to identify the presence of noxious weeds.
- A herbicide use proposal, as developed in coordination with the BLM Weed Coordinator, would be implemented. Herbicides would be limited to those approved by BLM.

- Ground disturbance would be limited by restricting travel outside of the construction zone, limiting the area occupied by storage and staging areas, and allowing travel only on designated routes.
- Equipment cleaning sites would be established and used to wash heavy equipment and all vehicles used for ground-disturbing activities. Contractors would be required to wash construction equipment offsite prior to entering the construction site. The Plan specifies washing methods to be used, and requires that a log be kept to document washing activities.
- The Applicant would provide training to workers to identify weeds and minimize activities that could propagate weeds.
- Straw bales and wattles used for erosion control would be certified weed-free.

This plan also includes a risk assessment of the invasive weed species currently known within the proposed project site, methods to control their spread on site and to adjacent off-site areas, and specific procedures to help minimize the introduction of new weed species (First Solar 2012a). Appendix A of the plan contains Risk Assessment Factors and Rating from BLM Manual 9015.

Closure, Decommissioning, and Reclamation Plan (First Solar 2012d) which summarizes the activities that would take place during the decommissioning process. The Decommissioning Plan addresses removal of project-related infrastructure; reuse, recycling, or disposal of components and wastes; site restoration and revegetation efforts; and cost estimates and funding mechanisms for these activities. The Decommissioning Plan would be revised and re-submitted shortly before project decommissioning to *reflect the most current requirements applicable to such activities.*

The Decommissioning Plan addresses immediate efforts to restore habitat and revegetate temporarily disturbed areas, as well as preparations to address potential future revegetation of impacted areas (First Solar 2012d). The Decommissioning Plan shall also include methods to salvage soil and seed in areas containing special status plant species for use in the revegetation of temporary impact areas, and shall include container stock and seed of the affected special status plant species for use in restoration/revegetation areas.

Streambed Alteration Agreement. Given the anticipated impacts to CDFW jurisdictional areas, the Applicant would be required to obtain a Streambed Alteration Agreement from the CDFW in accordance with Section 1602 of the California Fish and Game code. *Such an agreement would include terms, conditions, and possibly mitigation measures that would be implemented by the Applicant. Compliance with such an agreement would be a condition of the Project's ROW grant if it were to be approved.*

4.17.3.1 Direct and Indirect Impacts

The analysis in this section describes the impacts under the Proposed Action using the methodology prescribed under NEPA. Implementation of the *Proposed Action* would result in both long- and short-term adverse impacts to vegetation resources, depending on whether the impacts were *long-term* or temporary. In general, all vegetation located within the project's perimeter fence (approximately 1,989 acres) would be impacted *for the long-term* as a result of site preparation activities (clearing, tilling, and drum rolling). An additional 34 acres would be impacted by re-routed roads, access roads, and transmission ROW, for a total of 2,023 acres of *long-term* disturbance associated with this alternative. Temporary impacts to approximately 4 acres of vegetation would result from the need for laydown areas during construction of the transmission ROW; these are the only anticipated short-term impacts to vegetation resources.

For the purposes of this analysis, impacts associated with construction trailers, equipment and material staging areas, and parking areas, as well as the free space within the solar arrays, would be considered *long-term*.

A comparison of the acreage of vegetation communities, special status plant species, and *jurisdictional waters* impacted by the Proposed Action and other action alternatives is provided in Table 4.17-1.

Table 4.17-1. Alternatives Comparison for Vegetation Resources

Resource	Total in Study Area	Alternative 1	Alternative 2	***Revised*** Alternative 3	Alternative 4
Vegetative Communities (acres)					
Mojave creosote bush scrub	5,900	2,023	2,327	*1,657*	1,690
Mixed saltbush scrub	160	0	35	28	35
Dry Lake Bed/Playa	60	0	0	0	0
Special-Status Species Plants (number of occurrences/individuals)					
Desert pincushion	*31*	*12*	0	*2*	0
Mojave milkweed	15	10	1	*5*	1
Parish club cholla	*9*	*2*	*2*	*2*	*2*
Small-flowered androstephium	*88*	48	52	56	52
Rusby's desert mallow	5	3	0	*0*	0
Utah vine milkweed	12	4	6	*3*	0
Foxtail cactus	0	0	0	0	0
Nine-awned pappus grass	0	0	0	0	0
***Jurisdictional Waters* (acres)**					
CDFW Jurisdictional Ephemeral Drainages	434	146	178	*128*	130
Waters of the U.S. (WUS)	60 ac	0 ac	0 ac	0 ac	0 ac

Construction

Vegetation Communities

During the first phase of construction (construction mobilization), staking and flagging of sensitive plant species would occur, as required by MM-Veg-1. Impacts to sensitive vegetation communities from site preparation activities including clearing, grading, and excavating would be minimized prior to the start of construction through the use of construction fencing or staking/flagging to clearly identify the limits of work. When feasible, construction activities would avoid special status plant species. Vegetation would not be removed from the project site until the onset of a given construction phase. Topsoil would be removed and stored (where applicable), in accordance with the Closure, Decommissioning, and Reclamation Plan (Decommissioning Plan (First Solar 2012d). At other locations, such as within the solar array field, facility roadways, and around the O&M facility, vegetation would be disked under, mulched, or composted, and retained onsite to assist in erosion control and limit waste disposal (First Solar 2012a).

All natural vegetation would be completely removed from permanent facility sites, such as the solar arrays, the O&M facility, and the Project Substation. The Applicant estimates that 61 percent of the site would be cleared by the disc, contour grade, and roll method, using tractors pulling disking equipment. The other 39 percent of the site will require grading using the cut and fill method, completed by bulldozers, backhoes, and other heavy equipment. Clearing and grading for roads and smaller construction areas would be accomplished using bulldozers, road graders, or other standard earth-moving equipment. Plant root systems would be left in place to provide soil stability except where grading and trenching are required for placement of solar module foundations, underground electrical lines, roads/access ways, and inverter and transformer pads. As required in mitigation measure MM-Veg-3, special-status plants and succulents that require salvaging would be identified and avoided where feasible.

Under the Proposed Action, approximately 2,023 acres of creosote bush-white bursage vegetation (Figure 3.17-1) would be disturbed by project facilities, roads, and the transmission ROW and therefore, would not be allowed to revegetate during *Project* operations. Approximately 4 acres of temporarily impacted vegetation associated with construction of the transmission ROW, as well as some of the free space around the solar arrays, would be allowed to naturally recolonize; however, vegetation would be managed through mowing using brush-hog type equipment to a height less than 12 inches. The *Integrated* Weed Management Plan would be implemented to control the spread of invasive weeds on site and to adjacent off-site areas. Other project features, such as roadways, access ways, and where concrete foundations are used, would be cleared and left unvegetated for the life of the project. Vegetation would also be cleared for construction of drainage controls, including berms and basins.

Some areas, specifically 4 acres associated with laydown areas for construction of the transmission ROW, would experience temporary impacts to vegetation. Construction facilities, staging areas, and parking areas are assumed to result in *long-term* vegetative disturbance because they would be covered with solar arrays or other facilities once their temporary use is complete. Temporary disturbance sites would be restored to BLM specifications and native vegetation would be harvested for replanting to augment soil stabilization and site restoration. Approximately 4 acres of undeveloped, creosote bush-white bursage-type vegetated areas would be temporarily impacted during the construction period. The Applicant would commit to the restoration of vegetation within these temporarily-impacted areas (MM-Veg-5).

Construction activities such as grading and driving of heavy equipment on unpaved roadways would result in indirect impacts to vegetation from increased levels of blowing dust that may settle on surrounding vegetation. Increased levels of dust on plants can affect plants' photosynthetic capabilities, affect their productivity and nutritional qualities, and degrade the overall vegetation community. For example, the maximum rate of net photosynthesis of plants that received fine dust particulates was reduced to 21 percent of those of control plants in resinous leaflets of creosote bush, to 44 percent in resinous leaves and photosynthetic stems of cheesebush, and to 58 percent in non-resinous leaves of fourwing saltbush, which have vesiculated trichomes (small sac like hairs; Sharifi and others 1997). Plants of all three species that received fine dust particulates showed reduced maximum leaf conductance, transpiration, and instantaneous water-use efficiency (Sharifi and others 1997). Construction activities would also result in direct and indirect impacts to vegetation communities through soil erosion, which can accelerate the loss of nutrients in the soil and reduce the amount of nutrients available to plants in those vegetation communities (Okin and others 2001). Impacts from fugitive dust would be mitigated by implementation of mitigation measures MM-Veg-1 (*Minimize impacts to vegetation communities*), MM-Veg-2 (*Conduct biological monitoring during project construction*), and MM-Air-1 (*Develop and implement a fugitive dust control plan*).

Invasive and Noxious Weeds

Invasive weeds are threats to native vegetation resources. They can displace native plants (including special status plant species that are present at the project site), increase the threat of wildfire by increasing fuel load, and supplant plants used as forage that are important to herbivorous species (including special status plant species that are present at the site). Invasive weeds threaten vegetation resources in that they can exclude native plants (including special status species occurring in the project area), alter habitat structure, increase fire frequency and intensity, decrease forage for herbivorous wildlife (including special status species), and decrease water availability for both plants and wildlife. The *Integrated* Weed Management Plan (mitigation measure MM-Veg-4 and First Solar *2013c*) for the project includes a risk assessment of the invasive weed species currently known within the proposed Stateline site.

Grading and surface disturbance activities during the construction period and vehicle and equipment traffic are primary conduits for the spread of many invasive weeds. Construction activities and soil disturbance associated with the Proposed Action could indirectly introduce new invasive weeds to the project site and could further spread invasive weeds (such as Saharan mustard) that are already present in the area. Potential impacts from invasive plant species would be mitigated by implementation of MM-Veg-1 (*Minimize impacts to vegetation communities*), MM-Veg-2 (*Conduct biological monitoring during project construction*), MM-Veg-4 (*Prepare and implement an Integrated Weed Management Plan*), and MM-Veg-6 (*Streambed Alteration Agreement*). The Weed Management Plan required in MM-Veg-4 specifies requirements for washing of vehicles entering the site to reduce the potential for invasive weeds to be transported from other locations.

Approximately 1,900 acre feet (ac-ft) of water would be needed during the approximately 2 to 4 year construction period, with the majority of the construction water use occurring during the site preparation period of the first year. Water uses include soil compaction, dust control, and sanitary needs. This introduction of a water input to the vegetation communities that comprise the project area would be advantageous to plant species that thrive in wet conditions, as well as invasive and noxious weeds that benefit from additional moisture.

Special Status Plant Species

The following analysis considers impacts to special status plant species. Special status plant species are those given special recognition by federal, state, or local resource agencies/organizations, such as species listed by the USFWS, BLM, and CDFW as being of elevated conservation concern. All special status plant species have been identified due to dwindling populations, restricted range, or merely unknown population status and the need for additional study. Table 3.17-1 lists the special status plant species that were identified during surveys within the project area, or are likely to be present within or near to the project area.

As discussed in Section 3.17, the *Project* area is *primarily* comprised of two distinct vegetation types: Mojave creosote bush-white bursage and mixed saltbush (Sawyer and Keeler-Wolf 1995; Figure 3.17-1). Pre-project floristic surveys conducted in 2008/2010/2011 revealed 194 plant species present within the study area including: eight California Native Plant Society (CNPS) plant species, one BLM sensitive plant species (Rusby's desert mallow, which is also one of the eight CNPS species), seven species listed on the California Invasive Plant Council (Cal-IPC) Invasive Plant Inventory, and two State-listed noxious weeds (First Solar *2013e*).

The Proposed Action would result in *long-term* impacts to individuals or populations of six of the eight special status plant species document within the Project Study Area. The 2,143 acre footprint includes 82 occurrences of six different special status plant species including, desert pincushion (*8 occurrences out of 17 present in the Project Study Area [47 percent]*), Mojave

milkweed (*10 occurrences out of 15 present in the Project Study Area [67 percent]*), Parish club-cholla (*9 occurrences out of 27 present in the Project Study Area [33 percent]*), small-flowered androstephium (*48 occurrences out of 91 present in the Project Study Area [53 percent]*), Rusby's desert mallow (*3 occurrences out of 5 present in the Project Study Area [60 percent]*), and Utah vine milkweed (*4 occurrences out of 12 present in the Project Study Area [33 percent]*). The occurrences of these six special status plant species recorded during the 2010 full coverage botanical surveys are presented in Figure 3.17-2. These species would be susceptible to the same direct and indirect impacts as for the natural vegetation community, but these impacts would be mitigated by implementation of mitigation measures MM-Veg-1 and MM-Veg-3. In general, implementation of the Stateline project would affect all forms of vegetation within the proposed site.

Jurisdictional Waters

As discussed in Section 3.17.1.4, the project site does not contain any wetlands or riparian areas; however, it does contain numerous drainage channels or washes that feed into Ivanpah Lake or drain toward the lake but fail to extend all the way. The Project Study Area includes a 60-acre portion of Ivanpah Lake that is subject to both CDFW jurisdiction pursuant to Section 1602 of the Fish and Game Code and USACE jurisdiction under Section 404 of the Clean Water Act (CWA). This 60-acre portion of Ivanpah Lake does not lie within the Proposed Action footprint, and would not be directly impacted by construction of the Proposed Action. However, the drainage channels that traverse the study area, and which are under CDFW jurisdiction, would be directly impacted by vegetation removal and site grading associated with the *Proposed Action. Adverse impacts would include elimination of habitat, elimination of the hydrologic function of the ephemeral washes, potential increase in erosion. In addition, increasing disturbance of washes could make it more difficult to restore and re-vegetate the area during decommissioning.* The area of ephemeral drainages under CDFW jurisdiction that would be impacted would be 146 acres. Because drainages subject to CDFW jurisdiction would be directly impacted, the Applicant would be required to *submit a Notification of Lake or Streambed Alteration* that describes the mitigation for impacts to jurisdictional areas within the proposed Stateline site (see mitigation measure MM-Veg-6).

The Proposed Action could potentially cause indirect impacts to federal waters of the United States (WUS). These impacts could occur if activities on the site, including removal of stabilizing vegetation and modification of hydrology, caused an increase in sedimentation or erosion rates on the Ivanpah Dry Lake *or impede runoff from reaching the lake*. The potential for soil erosion and sedimentation caused by the Proposed Action was evaluated in Section 4.14 (Soil Resources). As discussed in that section, the Applicant has proposed a variety of construction methods and other features to protect site soils from erosion and downstream deposition. Section 2.1.3.1 outlines several proposed construction activities specifically designed to manage stormwater and reduce the potential for erosion and sedimentation impacts. These include avoidance of drainage channels, implementation of upstream debris basins to reduce stormwater flow velocities across the site, site grading to promote sheet flow, implementation of downstream retention basins to capture increased sediment loads, and use of silt fence and fiber rolls for erosion protection. *The basins would also be designed and operated to release stormwater to downstream areas in the same volumes as pre-project conditions, thus ensuring that runoff to the Dry Lake is not impeded.* The Applicant would construct and manage the basins in accordance with specifications in their Storm Water Management Plan (First Solar 2012k). The use of the basins, as well as the silt fence and fiber rolls, would be governed by the Applicant's Construction Stormwater Pollution Prevention Plan (SWPPP). In addition, a variety of mitigation measures (MM-Water-7, MM-Water-8, MM-Veg-6,

and MM-Air-1), would require the implementation of flood protection, soil stabilization, and revegetation efforts, each of which would further protect site soils during construction. Therefore, impacts due to soil erosion would be avoided or substantially reduced and the Proposed Action would not result in significant adverse impacts to Ivanpah Dry Lake.

Operation and Maintenance

The Stateline Solar Farm, which would generate electricity with no moving parts, no thermal cycle, and no water use for electricity generation, would require limited routine operation and maintenance activities onsite. Road and access ways would require regular maintenance, and the Applicant would manage vegetation within the project areas covered by solar modules in accordance with their Vegetation Management Plan.

Operation and maintenance activities associated with the Proposed Action could indirectly introduce new invasive weeds to the proposed project area and could further spread invasive weeds (such as Saharan mustard) that are already present in the area. Any vegetation that re-colonizes within the project footprint (area within the perimeter fence) during operations of the project would be maintained by the Applicant with routine mowing or trimming to prevent contact with and/or shading of the solar modules. During the lifetime of the *Project*, mowing could result in the direct mortality or injury of some plant species, and could shift the composition of the plant community to favor those species that are more-tolerant of continual disturbance from mowing/trimming. This shift would likely favor invasive weed species, while existing native plants would less tolerant of frequent disturbance; however, the Applicant's proposed Vegetation Management Plan (First Solar 2012f) and *Integrated* Weed Management Plan (First Solar *2013c*), in combination with mitigation measure MM-Veg-4 (see section 4.17.11), would minimize the potential for weed colonization and dominance on site by requiring implementation of a risk assessment of the invasive weed species currently known to exist within the study area (see discussion in Section 3.17.1.2), procedures to control their spread on site, and procedures to help minimize the introduction of new weed species.

The artificial shading provided by the PV panels could *also* potentially alter the natural plant community of the project area. The construction and operation of the solar arrays could change the amount and the location of sunlight reaching the ground underneath the panels. In turn, this could affect the composition of natural plant communities by either favoring those species that are better adapted to the new conditions, or detrimentally affecting species that are not as well-adapted. Again, the impacts associated with this effect would be managed through implementation of the Applicant's Vegetation Management Plan and *Integrated* Weed Management Plan.

Decommissioning

Decommissioning of the Stateline Solar Farm site would be done in accordance with the Applicant's preliminary Closure, Decommissioning, and Reclamation Plan (First Solar 2012d), required as part of mitigation measure MM-Lands-2. This Plan summarizes the activities that would take place during the decommissioning process. The decommissioning of the project would be similar to the construction activities described earlier, and would include demolition and removal of above-ground and subsurface facilities and site contouring and restoration. However, the duration of decommissioning would be shorter than the duration of construction.

Decommissioning is not expected to directly impact any vegetation communities, special status plant species, or jurisdictional drainages. This is because all decommissioning activities are expected to take place inside the footprint of the facility, and all vegetation and drainages

present in that area would already have been *impacted* during project construction. Similar to construction, indirect impacts to vegetation and drainages outside of the project footprint could occur due to release of fugitive dust, and/or from increased erosion or sedimentation downstream of the facility. As with construction, these potential indirect impacts would be mitigated through implementation of mitigation measures MM-Water-7, MM-Water-8, MM-Veg-6, and MM-Air-1.

As discussed in Section 2.1.3.4, site restoration activities to occur at the close of the project life would include:

- Decompaction and replacement of topsoils;
- Supplemental seeding;
- Planting of a combination of annual and perennial woody species, shrubs, and cacti;
- Weed control; and
- Performance monitoring and reporting for a minimum of 5 years, with re-seeding as necessary.

The proposed seed mix to be used for supplemental re-seeding is summarized in Table 2-2 of Chapter 2. The proposed container plants to be transplanted are summarized in Table 2-3 of Chapter 2. In desert environments, revegetation processes can take substantial lengths of time, so impacts are expected to occur for the long-term following decommissioning.

Modify Boundary of Ivanpah DWMA

Under the Proposed Action, the land area that would be added to the Ivanpah DWMA is shown in Table 4.17-2.

Table 4.17-2. Acreage to be Modified in Ivanpah DWMA, Alternative 1

Land Area	Acreage in Land Area
Current Ivanpah DWMA	37,280 ac
Total in Northern Ivanpah Unit	+ 29,110 ac
Ivanpah SEGS	-3,471 ac
Caltrans JPOE	-133 ac
Stateline Alternative 1	-2,143 ac
Subtotal New Acreage Added to DWMA	*23,363* **ac**
Removal of Ivanpah Playa	-2,997 ac
Final Total in Modified DWMA	*57,646* **ac**

Modification of the boundary of the existing Ivanpah DWMA would result in an increased potential for the spread of noxious and invasive weeds from the *Project* area to the proposed Ivanpah DWMA*, given the proximity of the Project to the boundaries of the expanded DWMA.* The location of the existing Ivanpah DWMA (Figure 2-1) is separated from the Stateline Solar Farm project site by approximately 2 miles and the I-15 corridor, a far enough distance to prevent the transfer of noxious weeds. *The contemplated modification to* the Ivanpah DWMA boundary *under the Proposed Action* would surround the project site on all sides by a DWMA, as opposed to current conditions under which the project site is surrounded entirely by lands not categorized as BLM special management areas (SMAs), increasing the potential for invasive and noxious weeds to be transferred from the site to the DWMA.

Expansion of the DWMA would also have the beneficial effect of protecting special status plants located in the *23,363* acre area added to the DWMA.

4.17.3.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, and Decommissioning) are presented below based on the CEQA Significance Criteria presented in Section 4.17.2. Only those significance criteria that were determined to be relevant to the project are addressed below:

Veg-1

Construction

The Proposed Action is anticipated to result in impacts to individuals or populations of the following six special status plant species observed within the survey area (Figure 3.17-2): desert pincushion, Mojave milkweed, Parish club-cholla, small-flowered androstephium (pink funnel lily), Rusby's desert mallow, and Utah vine milkweed. The number of individuals/occurrences of each that would be impacted is small, and would not affect the larger populations of each species. *Therefore, direct impacts to special status plants would be less than significant.*

Construction activities such as bringing equipment from other project sites or modification of site hydrology can introduce invasive species, or make site conditions favorable for their spread. Implementation of mitigation measure MM-Veg-4 (*Integrated* Weed Management Plan) would reduce the potential impact associated with introduction or spread of invasive species to less than significant.

Release of fugitive dust as a result of grading and use of heavy equipment during project construction could result in deposition of dust onto plants, affecting these plants' photosynthetic capabilities. Implementation of mitigation measure MM-Air-1 would minimize the release of fugitive dust, and would reduce the potential impact to less than significant.

Operation and Maintenance

The Proposed Action would not result in additional impact to any special status plant species during operations and maintenance.

Operations activities such as bringing equipment from other project sites or modification of site hydrology can introduce invasive species, or make site conditions favorable for their spread. Implementation of mitigation measure MM-Veg-4 (*Integrated* Weed Management Plan) would reduce the potential impact associated with introduction or spread of invasive species to less than significant.

Release of fugitive dust as a result of grading and use of heavy equipment during project operations could result in deposition of dust onto plants, affecting these plants' photosynthetic capabilities. Implementation of mitigation measure MM-Air-3 would minimize the release of fugitive dust, and would reduce the potential impact to less than significant.

Decommissioning

The Proposed Action would not result in additional impact to any special status plant species during decommissioning.

Decommissioning activities such as bringing equipment from other project sites or modification of site hydrology can introduce invasive species, or make site conditions favorable for their spread. Implementation of mitigation measure MM-Veg-4 (*Integrated* Weed Management Plan)

would reduce the potential impact associated with introduction or spread of invasive species to less than significant.

Release of fugitive dust as a result of grading and use of heavy equipment during project decommissioning could result in deposition of dust onto plants, affecting these plants' photosynthetic capabilities. Implementation of mitigation measure MM-Air-1 would minimize the release of fugitive dust, and would reduce the potential impact to less than significant.

Veg-2

Construction

The Proposed Action would result in temporary and *long-term* impacts to 2,027 acres of creosote bush-white bursage scrub, which is not considered a sensitive vegetation community. Therefore, these impacts would not be significant.

Implementation of the Proposed Action would result in temporary and *long-term* impacts to approximately 146 acres of CDFW jurisdictional resources, including removal or filling of jurisdictional areas during site preparation activities. Implementation of mitigation measure MM-Veg-6 (*Streambed Alteration Agreement*) would reduce these impacts to less than significant.

Operation and Maintenance

Operations of the Proposed Action would not result in impacts to any sensitive vegetation community, and would not have any further impacts to CDFW jurisdictional areas.

Decommissioning

The Proposed Action would not result in impacts to any sensitive vegetation communities or CDFW jurisdictional areas during decommissioning.

4.17.4 Alternative 2: 2,385 Ac Alternative

4.17.4.1 Direct and Indirect Impacts

Alternative 2 is conceptually similar to the Proposed Action (Alternative 1), but construction activities associated with Alternative 2 would be slightly greater than the Proposed Action due to the slightly increased acreage (2,385 acres versus 2,143 acres). The Alternative 2 footprint (Figure 2-4) would partially overlap with the land area associated with the Proposed Action (Figure 1-1) north of the Primm Valley Golf Course, but would also include a parcel on the south side of the Primm Valley Golf Course. The vegetation-related construction impacts of Alternative 2 would be similar, but slightly greater, than those of the Proposed Action. Construction activities would last for a slightly longer time and the bifurcated footprint would result in an additional 339 acres of *long-term* disturbance. The vegetation characteristics of the separate area are expected to be the same as those of the Proposed Action, so there would be little difference in the potential for impacts to native plant communities or special status plants. Mitigation measures MM-Veg-1, MM-Veg-2, and MM-Veg-3 would minimize impacts to sensitive plant communities.

Construction

A comparison of the acreage of vegetation communities, special status plant species, and *jurisdictional waters* impacted by the Proposed Action and other action alternatives is provided in Table 4.17-1. Construction activities associated with Alternative 2 would result in direct temporary and *long-term* losses of native vegetation and indirect effects resulting from vegetation clearing, grading, or other surface disturbance. Alternative 2 would also affect special status plant species and state jurisdictional areas.

Vegetation Communities

During construction of Alternative 2, potential impacts to vegetation would be similar to those described under "Construction" for the Proposed Action. Under Alternative 2, all natural vegetation, including special status plant species, would be completely removed from the permanent facility sites, such as the solar arrays, the O&M facility, and the Project Substation by clearing and grading using bulldozers, road graders, and/or other standard earth-moving equipment. Approximately 2,344 acres would be disturbed by project facilities, roads, and the transmission ROW. Alternative 2 would result in direct impacts to the following vegetation communities: 2,327 acres of creosote bush-white bursage scrub and 35 acres of mixed saltbush. The nature of these impacts is similar to the Proposed Action, but Alternative 2 would increase the impacts to these communities by approximately 321 acres. Other project features such as roadways, access ways, and locations where concrete foundations are used would be cleared and left unvegetated for the life of the Stateline Solar Farm and could result in indirect increased wind erosion of the soil. Dust can have deleterious physiological effects on plants and may affect their productivity and nutritional qualities. The nature of these impacts would be the same as that described for the Proposed Action.

Under Alternative 2, construction of laydown areas for the transmission ROW would result in temporary impacts to the same approximate area (about 4 acres) as was described for the Proposed Action. Temporary disturbance sites would be restored to BLM specifications and, in some situations, native vegetation may be harvested for replanting to augment soil stabilization and site restoration. The Applicant would commit to the restoration of vegetation within these temporarily-impacted areas (MM-Veg-5).

Mitigation for construction activities would be the same as for Alternative 1.

Invasive and Noxious Weeds

Similar to the Proposed Action, construction activities and soil disturbance associated with Alternative 2 could indirectly introduce new invasive weeds to the *Project* site and could further spread invasive weeds (such as Saharan mustard) that are already present in the project area. Potential impacts from invasive plant species would be mitigated by implementation of MM-Veg-1 (*Minimize impacts to vegetation communities*), MM-Veg-2 (*Conduct biological monitoring during project construction*), MM-Veg-4 (*Prepare and implement an Integrated Weed Management Plan*), MM-Veg-6 (*Streambed Alteration Agreement*).

Alternative 2 would require the same approximate volume of water (1,900 ac-ft) during the construction period as compared to the Proposed Action. This introduction of a water input to the vegetation communities that comprise the project area would be advantageous to plant species that thrive in wet conditions, as well as invasive and noxious weeds that benefit from additional moisture. The *Integrated* Weed Management Plan (First Solar *2013c*) for the project includes a risk assessment of the invasive weed species currently known within *Proposed Action site.*

Special Status Plant Species

Alternative 2 is anticipated to result in impacts to individuals or populations of the following three special status plant species observed within the rare plant survey area: Mojave milkweed (one occurrence), small-flowered androstephium (pink funnel lily; 52 occurrences), and Utah vine milkweed (6 occurrences) (Figure 3.17-2). Impacts to special status plants would decrease under Alternative 2 with three fewer species and 23 fewer individuals or occurrences being affected as compared to the Proposed Action. Specifically, Alternative 2 would impact an additional four small-flowered androstephium and two Utah vine milkweed individuals, but nine fewer Mojave milkweed individuals, as compared to the Proposed Action. Based on pre-project botanical surveys, Alternative 2 would not result in any direct impacts to the following special status plant species: desert pincushion, Parish club-cholla, and Rusby's desert mallow. Overall, the nature of Alternative 2 impacts would be similar to those described for the Proposed Action*, and the mitigation measures proposed for Alternative 1 would also apply to Alternative 2*.

Similar to the Proposed Action 1, activities such as grading, trenching, and driving of heavy equipment on unpaved roadways also would result in indirect impacts to special status plant species from increased levels of dust that may settle on the plants. Increased levels of dust on plants can affect plants' photosynthetic capabilities, affect their productivity and nutritional qualities, and degrade the overall vegetation community.

Jurisdictional Waters

Long-term impacts to CDFW jurisdictional areas would result with the implementation of Alternative 2. Within the footprint of Alternative 2, *long-term* project-related impacts to CDFW jurisdictional areas would total approximately 178 acres (LSA 2011). The nature of these impacts is the same as that described for the Proposed Action *in Section 4.17.3.1, although they would be incrementally greater in size due to the larger project footprint*.

Operation and Maintenance

The vegetation-related operational impacts of Alternative 2 would be nearly identical to those of the Proposed Action. The potential for impacts to native plant communities and noxious and invasive weed effects would be substantially the same as those described under the Proposed Action. Mitigation measures MM-Veg-1, MM-Veg-2, and MM-Veg-3 would minimize impacts to sensitive plant communities.

Use of access roads during operations for Alternative 2 could result in direct and indirect impacts to vegetation communities and special status plants as a result of fugitive dust, although fugitive dust impacts would be substantially reduced during operations given the reduced number of vehicle trips as compared to the construction phase. Operational activities associated with Alternative 2 also could indirectly introduce new invasive weeds to the proposed Stateline site and could further spread invasive weeds (such as Saharan mustard) that are already present in the area. These impacts would be the same as the Proposed Action Mitigation for operations activities would be the same as for the Proposed Action.

Decommissioning

Decommissioning of Alternative 2 is not expected to directly impact any vegetation communities, special status plant species, or jurisdictional drainages. This is because all decommissioning activities are expected to take place inside the footprint of the facility, and all vegetation and drainages present in that area would already have been removed during project

construction. Similar to construction, indirect impacts to vegetation and drainages outside of the project footprint could occur due to release of fugitive dust, and/or from increased erosion or sedimentation downstream of the facility. As with construction, these potential indirect impacts would be mitigated through implementation of mitigation measures MM-Water-7, MM-Water-8, MM-Veg-6, and MM-Air-1.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be similar under Alternative 2 as the Proposed Action, except it would include a different land area. Under Alternative 2, the land area that would be added to the DWMA is shown in Table 4.17-3.

Table 4.17-3. Acreage to be Modified in Ivanpah DWMA, Alternative 2

Land Area	Acreage in Land Area
Current Ivanpah DWMA	37,280 ac
Total in Northern Ivanpah Unit	+ 29,110 ac
Ivanpah SEGS	-3,471 ac
Caltrans JPOE	-133 ac
Stateline Alternative 2	-2,385 ac
Subtotal New Acreage Added to DWMA	*23,121* **ac**
Removal of Ivanpah Playa	-2,997 ac
Final Total in Modified DWMA	*57,404* **ac**

As discussed for the Proposed Action, modification of the boundary of the existing Ivanpah DWMA would result in an increased potential for the spread of noxious and invasive weeds from the Stateline project area to the proposed Ivanpah DWMA*, given the proximity of the Project to the boundaries of the expanded DWMA. As with the Proposed Action, expansion* of the DWMA would also have the beneficial effect of protecting special status plants located in the *23,121* acre area added to the DWMA.

4.17.4.2 CEQA Significance Determinations

Veg-1

Construction

Alternative 2 is anticipated to result in impacts to individuals or populations of the following three special status plant species observed within the rare plant survey area: Mojave milkweed (one occurrence), small-flowered androstephium (pink funnel lily; 52 occurrences), and Utah vine milkweed (six occurrences). The number of individuals/occurrences of each that would be impacted is small, and would not affect the distribution of each species. *Therefore, direct impacts to special status plants would be less than significant.*

Construction activities such as bringing equipment from other project sites or modification of site hydrology can introduce invasive species, or make site conditions favorable for their spread. Implementation of mitigation measure MM-Veg-4 (*Integrated* Weed Management Plan) would reduce the potential impact associated with introduction or spread of invasive species to less than significant.

Release of fugitive dust as a result of grading and use of heavy equipment during project construction could result in deposition of dust onto plants, affecting these plants' photosynthetic capabilities. Implementation of mitigation measure MM-Air-1 would minimize the release of fugitive dust, and would reduce the potential impact to less than significant.

Operation and Maintenance

Alternative 2 would not result in additional impact to any special status plant species during operations and maintenance.

Operations activities such as bringing equipment from other project sites or modification of site hydrology can introduce invasive species, or make site conditions favorable for their spread. Implementation of mitigation measure MM-Veg-4 (*Integrated* Weed Management Plan) would reduce the potential impact associated with introduction or spread of invasive species to less than significant.

Release of fugitive dust as a result of grading and use of heavy equipment during project operations could result in deposition of dust onto plants, affecting these plants' photosynthetic capabilities. Implementation of mitigation measure MM-Air-3 would minimize the release of fugitive dust, and would reduce the potential impact to less than significant.

Decommissioning

Alternative 2 would not result in additional impact to any special status plant species during decommissioning.

Decommissioning activities such as bringing equipment from other project sites or modification of site hydrology can introduce invasive species, or make site conditions favorable for their spread. Implementation of mitigation measure MM-Veg-4 (*Integrated* Weed Management Plan) would reduce the potential impact associated with introduction or spread of invasive species to less than significant.

Release of fugitive dust as a result of grading and use of heavy equipment during project decommissioning could result in deposition of dust onto plants, affecting these plants' photosynthetic capabilities. Implementation of mitigation measure MM-Air-1 would minimize the release of fugitive dust, and would reduce the potential impact to less than significant.

Veg-2

Construction

Alternative 2 would result in direct impacts to the following vegetation communities: 2,327 acres of creosote bush-white bursage scrub and 35 acres of mixed saltbush. Neither of these communities are considered a sensitive vegetation community, so impacts to these communities would be less than significant.

Implementation of Alternative 2 would result in temporary and *long-term* impacts to approximately 178 acres of CDFW jurisdictional resources, including removal or filling in of jurisdictional areas during site preparation activities. Implementation of mitigation measure MM-Veg-6 (*Streambed Alteration Agreement*) would reduce these impacts to less than significant.

Operation and Maintenance

Operations during Alternative 2 would not result in impacts to any sensitive vegetation community, and would not have any further impacts to CDFW jurisdictional areas.

Decommissioning

Alternative 2 would not result in impacts to any sensitive vegetation communities or CDFW jurisdictional areas during decommissioning.

4.17.5 *Revised* Alternative 3: *1,685* Ac Alternative

4.17.5.1 Direct and Indirect Impacts

Revised Alternative 3 is conceptually similar to the Proposed Action (Alternative 1), but would have a *smaller* footprint. The land area associated with *Revised* Alternative 3 would partially overlap with the land area associated with the Proposed Action (Figure 1-1), but would be shifted towards the south and east. Construction activities associated with *Revised* Alternative 3 would be the same as those of the Proposed Action due to the similar size. The project site under *Revised* Alternative 3 is approximately *458 acres smaller* than the project site under the Proposed Action.

Construction

A comparison of the acreage of vegetation communities, special status plant species, and *jurisdictional waters* impacted by the Proposed Action and other action alternatives is provided in Table 4.17-1. Construction activities associated with *Revised* Alternative 3 would result in direct temporary and *long-term* losses of native vegetation and indirect effects resulting from vegetation clearing, grading, or other surface disturbance. *Revised* Alternative 3 would also affect special status plant species and state jurisdictional areas.

Vegetation Communities

During construction of *Revised* Alternative 3, potential impacts to vegetation would be similar to those described under "Construction" for the Proposed Action. Under *Revised* Alternative 3, all natural vegetation, including special status plant species, would be completely removed from the permanent facility sites. Approximately *1,651* acres would be disturbed by project facilities, roads, and the transmission ROW. *Revised* Alternative 3 would result in direct impacts to the following vegetation communities: *1,657* acres of creosote bush-white bursage scrub and 28 acres of mixed saltbush. The nature of these impacts is similar to Alternative 1, but *Revised* Alternative 3 would *decrease* the *magnitude of the* impacts to vegetation communities by *disturbing* approximately *458 fewer* acres *than* the Proposed Action. Other *Project* features, such as roadways, access ways, and where concrete foundations are used, would be cleared and left unvegetated for the life of the Stateline Solar Farm and would result in indirect increased wind erosion of the soil. The nature of these impacts would be the same as that described for Alternative 1.

Under *Revised* Alternative 3, construction of laydown areas for the transmission ROW would result in temporary impacts to the same approximate area (about 4 acres) as was described for Alternative 1. Mitigation for construction activities would be the same as for Alternative 1.

Invasive and Noxious Weeds

Similar to the Proposed Action, construction activities and soil disturbance associated with *Revised* Alternative 3 could indirectly introduce new invasive weeds to the proposed Stateline site and could further spread invasive weeds that are already present in the proposed Stateline

project area. Mitigation for construction-related impacts to invasive and noxious weeds would be the same as for the Proposed Action.

Revised Alternative 3 would require the same approximate volume of water (1,900 ac-ft) during the construction period as compared to the Proposed Action. Potential impacts related to water use would be the same as those described under Alternative 1. The *Integrated* Weed Management Plan (First Solar *2013c*) for the project includes a risk assessment of the invasive weed species currently known within the proposed Stateline site.

Special Status Plant Species

Revised Alternative 3 would result in slightly increased impacts to small-flowered androstephium (pink funnel lily) as compared to the Proposed Action in that the *Revised* Alternative 3 footprint would disturb an additional 8 individuals of this species. Under *Revised* Alternative 3, anticipated *long-term* impacts to the following special status plant species individuals or populations would be *reduced* as compared to Alternative 1: desert pincushion (*two occurrences as compared to twelve for the Proposed Action*), Mojave milkweed (*five occurrences as compared to ten for the Proposed Action*), Rusby's desert mallow (*zero occurrences as compared to three for the Proposed Action*), and Utah vine milkweed (*three occurrences as compared to four for the Proposed Action*) (Figure 3.17-2). Overall the *magnitude* of *Revised* Alternative 3 impacts *to special status plants* would be *reduced as compared to* those described for Alternative 1.

Jurisdictional Waters

Long-term impacts to CDFW jurisdictional areas would result with the implementation of *Revised* Alternative 3. Within the footprint of *Revised* Alternative 3, *long-term* project-related impacts to CDFW jurisdictional areas would *be reduced to 128 acres, as compared to 146 acres under the Proposed Action, due to the smaller project site*. The nature of these impacts is the same as that described for Alternative 1 *in Section 4.17.3.1*.

Operation and Maintenance

During the operations phase of *Revised* Alternative 3, potential impacts to vegetation would be the same as described under "Operation and Maintenance Activities" for the Proposed Action.

Use of access roads during operations for *Revised* Alternative 3 could result in direct and indirect impacts to vegetation communities and special status plants as a result of fugitive dust, although fugitive dust impacts would be substantially reduced during operations given the reduced number of vehicle trips as compared to the construction phase. Operations activities associated with *Revised* Alternative 3 could further spread invasive weeds (such as Saharan mustard) that are already present in the proposed Stateline site. These impacts would be the same as or the Proposed Action. Mitigation for O&M activities would be the same as for the Proposed Action.

Decommissioning

Decommissioning of *Revised* Alternative 3 is not expected to directly impact any vegetation communities, special status plant species, or jurisdictional drainages. This is because all decommissioning activities are expected to take place inside the footprint of the facility, and all vegetation and drainages present in that area would already have been removed during project

construction. Similar to construction, indirect impacts to vegetation and drainages outside of the project footprint could occur due to release of fugitive dust, and/or from increased erosion or sedimentation downstream of the facility. As with construction, these potential indirect impacts would be mitigated through implementation of mitigation measures MM-Water-7, MM-Water-8, MM-Veg-6, and MM-Air-1.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be similar under *Revised* Alternative 3 as Alternative 1, except it would include a slightly different land area. Under *Revised* Alternative 3, the land area that would be added to the DWMA is shown in Table 4.17-4.

Table 4.17-4. Acreage to be Modified in Ivanpah DWMA, *Revised* Alternative 3

Land Area	Acreage in Land Area
Current Ivanpah DWMA	37,280 ac
Total in Northern Ivanpah Unit	+ 29,110 ac
Ivanpah SEGS	-3,471 ac
Caltrans JPOE	-133 ac
Stateline *Revised* Alternative 3	*-1,685* ac
Subtotal New Acreage Added to DWMA	***23,821* ac**
Removal of Ivanpah Playa	-2,997 ac
Final Total in Modified DWMA	***58,104* ac**

The modification of the boundary of the Ivanpah DWMA would be the same under *Revised* Alternative 3 as the Proposed Action. As discussed for the Proposed Action, modification of the boundary of the existing Ivanpah DWMA would result in an increased potential for the spread of noxious and invasive weeds from the *Project* area to the proposed Ivanpah DWMA*, given the proximity of the Project to the boundaries of the expanded DWMA. As with the Proposed Action, expansion* of the DWMA would also have the beneficial effect of protecting special status plants located in the *23,821* acre area added to the DWMA.

4.17.5.2 CEQA Significance Determinations

Veg-1

Construction

Revised Alternative 3 is anticipated to result in impacts to individuals or populations of the following six special status plant species observed within the survey area (Figure 3.17-2): desert pincushion, Mojave milkweed, Parish club-cholla, small-flowered androstephium (pink funnel lily), Rusby's desert mallow, and Utah vine milkweed. The number of individuals/occurrences of each that would be impacted is small, and would not affect the distribution of each species. *Therefore, direct impacts to special status plants would be less than significant.*

Construction activities such as bringing equipment from other project sites or modification of site hydrology can introduce invasive species, or make site conditions favorable for their spread. Implementation of mitigation measure MM-Veg-4 (*Integrated* Weed Management Plan) would reduce the potential impact associated with introduction or spread of invasive species to less than significant.

Release of fugitive dust as a result of grading and use of heavy equipment during project construction could result in deposition of dust onto plants, affecting these plants' photosynthetic capabilities. Implementation of mitigation measure MM-Air-1 would minimize the release of fugitive dust, and would reduce the potential impact to less than significant.

Operation and Maintenance

Revised Alternative 3 would not result in additional impact to any special status plant species during operations and maintenance.

Operations activities such as bringing equipment from other project sites or modification of site hydrology can introduce invasive species, or make site conditions favorable for their spread. Implementation of mitigation measure MM-Veg-4 (*Integrated* Weed Management Plan) would reduce the potential impact associated with introduction or spread of invasive species to less than significant.

Release of fugitive dust as a result of grading and use of heavy equipment during project operations could result in deposition of dust onto plants, affecting these plants' photosynthetic capabilities. Implementation of mitigation measure MM-Air-3 would minimize the release of fugitive dust, and would reduce the potential impact to less than significant.

Decommissioning

Revised Alternative 3 would not result in additional impact to any special status plant species during decommissioning.

Decommissioning activities such as bringing equipment from other project sites or modification of site hydrology can introduce invasive species, or make site conditions favorable for their spread. Implementation of mitigation measure MM-Veg-4 (*Integrated* Weed Management Plan) would reduce the potential impact associated with introduction or spread of invasive species to less than significant.

Release of fugitive dust as a result of grading and use of heavy equipment during project decommissioning could result in deposition of dust onto plants, affecting these plants' photosynthetic capabilities. Implementation of mitigation measure MM-Air-1 would minimize the release of fugitive dust, and would reduce the potential impact to less than significant.

Veg-2

Construction

Revised Alternative 3 would result in direct impacts to the following vegetation communities: *1,657* acres of creosote bush-white bursage scrub and 28 acres of mixed saltbush. Neither of these communities are considered a sensitive vegetation community, so impacts to these communities would be less than significant.

Implementation of *Revised* Alternative 3 would result in temporary and *long-term* impacts to approximately *128* acres of CDFW jurisdictional resources, including removal or filling in of jurisdictional areas during site preparation activities. Implementation of mitigation measure MM-Veg-6 (*Streambed Alteration Agreement*) would reduce these impacts to less than significant.

Operation and Maintenance

Operations during *Revised* Alternative 3 would not result in impacts to any sensitive vegetation community, and would not have any further impacts to CDFW jurisdictional areas.

Decommissioning

Revised Alternative 3 would not result in impacts to any sensitive vegetation communities or CDFW jurisdictional areas during decommissioning.

4.17.6 Alternative 4: Reduced Acreage Alternative

4.17.6.1 Direct and Indirect Impacts

Alternative 4 is conceptually similar to the Proposed Action, but would be placed within a different land area which comprises 1,766 acres. The land area associated with Alternative 4 would be the same as the northern portion of the bifurcated footprint of Alternative 2 (Figure 2-3). Under Alternative 4, the *Project* would generate 218 MW (compared to 300 MW generated by Alternatives 1, 2, and 3) and would have a footprint of approximately 377 fewer acres (17 percent) than the Proposed Action project footprint. Alternative 4 would result in a 377-acre reduction of *long-term* disturbance to vegetation related to site-clearing activities.

Construction

Vegetation Communities

During construction of Alternative 4, potential impacts to vegetation would be similar to those described under “Construction” for the Proposed Action. Under Alternative 4, all natural vegetation, including special status plant species, would be completely removed from the permanent facility sites. Approximately 1,725 acres would be disturbed by project facilities, roads, and the transmission ROW. These and other *Project* features, such as access ways and where concrete foundations are used, would be cleared and left unvegetated for the life of the Stateline Solar Farm and would result in indirect increased wind erosion of the soil. Alternative 4 would result in direct impacts to the following sensitive vegetation communities: 1,690 acres of creosote bush-white bursage scrub and 35 acres of mixed saltbush (see Northern portion of Alternative 2 on Figure 3.17-1). The nature of these impacts is similar to those of Alternative 1, but *lesser in magnitude given the smaller Project* area. Alternative 4 would decrease the impacts to sensitive vegetation communities by approximately 377 acres as compared to the Proposed Action. Overall, the nature of the impacts would be the same as that described for Alternative 1.

Under Alternative 4, construction of laydown areas for the transmission ROW would result in temporary impacts to the same approximate area (about 4 acres) as was described for Alternative 1. Mitigation for construction activities would be the same as for Alternative 1.

Invasive and Noxious Weeds

Similar to the Proposed Action, construction activities and soil disturbance associated with Alternative 4 could indirectly introduce new invasive weeds to the proposed Stateline site and could further spread invasive weeds that are already present in the project area. Mitigation for construction-related impacts to invasive and noxious weeds would be the same as for the Proposed Action.

Alternative 4 would require the same approximate volume of water (1,900 ac-ft) during the construction period as compared to the Proposed Action and thus potential impacts related to water use would be the same. The *Integrated* Weed Management Plan (First Solar *2013c*) for the project includes a risk assessment of the invasive weed species currently known within the proposed Stateline site.

Special Status Plant Species

Alternative 4 would result in decreased impacts to special status plant species as compared to the Proposed Action. The Alternative 4 footprint would affect 53 total special status plant individuals or occurrences (one Mojave milkweed and 52 small-flowered androstephium occurrences) (Figure 3.17-2). Therefore, this alternative affects 29 fewer special status plant individuals/populations *relative* to the Proposed Action. Overall the nature of Alternative 4 impacts *to special status plant species* would be *similar to, but lesser in magnitude,* than those described for Alternative 1.

Jurisdictional Waters

Long-term impacts to CDFW jurisdictional areas would result with the implementation of Alternative 4. Within the footprint of Alternative 4, *long-term* project-related impacts to CDFW jurisdictional areas would total approximately 130 acres (LSA 2011). The nature of these impacts is the same as that described for Alternative 1 *in Section 4.17.3.1*.

Operation and Maintenance

Use of access roads during operations for Alternative 4 could result in direct and indirect impacts to vegetation communities and special status plants as a result of fugitive dust, although fugitive dust impacts would be substantially reduced during operations given the reduced number of vehicle trips as compared to the construction phase. Operations activities associated with Alternative 4 could further spread invasive weeds that are already present in the proposed Stateline site. These impacts would be *similar to those associated with* Alternative 1. Mitigation for operations activities would be the same as for Alternative 1.

Decommissioning

Decommissioning of Alternative 4 is not expected to directly impact any vegetation communities, special status plant species, or jurisdictional drainages. This is because all decommissioning activities are expected to take place inside the footprint of the facility, and all vegetation and drainages present in that area would already have been removed during project construction. Similar to construction, indirect impacts to vegetation and drainages outside of the project footprint could occur due to release of fugitive dust, and/or from increased erosion or sedimentation downstream of the facility. As with construction, these potential indirect impacts would be mitigated through implementation of mitigation measures MM-Water-7, MM-Water-8, MM-Veg-6, and MM-Air-1.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be similar under Alternative 4 as Alternative 1, except it would include a different land area. Under Alternative 4, the land area that would be added to the DWMA is shown in Table 4.17-5.

Table 4.17-5. Acreage to be Modified in Ivanpah DWMA, Alternative 4

Land Area	Acreage in Land Area
Current Ivanpah DWMA	37,280 ac
Total in Northern Ivanpah Unit	+ 29,110 ac
Ivanpah SEGS	-3,471 ac
Caltrans JPOE	-133 ac
Stateline Alternative 4	-1,766 ac
Subtotal New Acreage Added to DWMA	***23,740* ac**
Removal of Ivanpah Playa	-2,997 ac
Final Total in Modified DWMA	***58,023* ac**

The modification of the boundary of the Ivanpah DWMA would be the same under Alternative 4 as Alternative 1. As discussed for the Proposed Action, modification of the boundary of the existing Ivanpah DWMA would result in an increased potential for the spread of noxious and invasive weeds from the Stateline project area to the proposed Ivanpah DWMA*, given the proximity of the Project to the boundaries of the expanded DWMA. As with the Proposed Action, expansion* of the DWMA would also have the beneficial effect of protecting special status plants located in the *23,740* acre area added to the DWMA.

4.17.6.2 CEQA Significance Determinations

Veg-1

Construction

The Alternative 4 footprint would affect 53 total special status plant individuals or populations, specifically, one Mojave milkweed and 52 small-flowered androstephium (pink funnel lily). The number of individuals/occurrences of each that would be impacted is small, and would not affect the distribution of each species. *Therefore, direct impacts to special status plants would be less than significant.*

Construction activities such as bringing equipment from other project sites or modification of site hydrology can introduce invasive species, or make site conditions favorable for their spread. Implementation of mitigation measure MM-Veg-4 (*Integrated* Weed Management Plan) would reduce the potential impact associated with introduction or spread of invasive species to less than significant.

Release of fugitive dust as a result of grading and use of heavy equipment during project construction could result in deposition of dust onto plants, affecting these plants' photosynthetic capabilities. Implementation of mitigation measure MM-Air-1 would minimize the release of fugitive dust, and would reduce the potential impact to less than significant.

Overall, construction of Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

Operation and Maintenance

Alternative 4 would not result in additional impact to any special status plant species during operations and maintenance.

Operations activities such as bringing equipment from other project sites or modification of site hydrology can introduce invasive species, or make site conditions favorable for their spread. Implementation of mitigation measure MM-Veg-4 (*Integrated* Weed Management Plan) would reduce the potential impact associated with introduction or spread of invasive species to less than significant.

Release of fugitive dust as a result of grading and use of heavy equipment during project operations could result in deposition of dust onto plants, affecting these plants' photosynthetic capabilities. Implementation of mitigation measure MM-Air-3 would minimize the release of fugitive dust, and would reduce the potential impact to less than significant.

Overall, operation of Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

Decommissioning

Alternative 4 would not result in additional impact to any special status plant species during decommissioning.

Decommissioning activities such as bringing equipment from other project sites or modification of site hydrology can introduce invasive species, or make site conditions favorable for their spread. Implementation of mitigation measure MM-Veg-4 (*Integrated* Weed Management Plan) would reduce the potential impact associated with introduction or spread of invasive species to less than significant.

Release of fugitive dust as a result of grading and use of heavy equipment during project decommissioning could result in deposition of dust onto plants, affecting these plants' photosynthetic capabilities. Implementation of mitigation measure MM-Air-1 would minimize the release of fugitive dust, and would reduce the potential impact to less than significant.

Overall, decommissioning of Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

Veg-2

Construction

Alternative 4 would result in direct impacts to the following vegetation communities: 1,690 acres of creosote bush-white bursage scrub and 35 acres of mixed saltbush. Creosote bush-white bursage scrub is not considered a sensitive vegetation community, so impacts to this community would be less than significant. Neither of these communities are considered a sensitive vegetation community, so impacts to these communities would be less than significant.

Implementation of Alternative 4 would result in temporary and *long-term* impacts to approximately 130 acres of CDFW jurisdictional resources, including removal or filling in of jurisdictional areas during site preparation activities. Implementation of mitigation measure MM-Veg-6 (*Streambed Alteration Agreement*) would reduce these impacts to less than significant.

Overall, operation of Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

Operation and Maintenance

Operations during Alternative 4 would not result in impacts to any sensitive vegetation community, and would not have any further impacts to CDFW jurisdictional areas. In addition, Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

Decommissioning

Alternative 4 would not result in impacts to any sensitive vegetation communities or CDFW jurisdictional areas during decommissioning. In addition, Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

4.17.7 Alternative 5: No Action Alternative

4.17.7.1 Direct and Indirect Impacts

Under Alternative 5, the BLM would not approve the proposed facility and would not amend the CDCA Plan. As a result, no solar energy project would be constructed, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Since there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, no new structures or facilities would be constructed or operated on the site and no new ground disturbance would occur. As a result, none of the impacts to vegetation resources and ephemeral drainage systems from construction, operation, or decommissioning of the *Project* would occur.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under the No Action Alternative. Land uses associated with the Ivanpah DWMA would continue as they are today. This alternative would have no adverse impact on vegetation resources, but would also not have the beneficial impact of protecting special status plant species and vegetation communities within the proposed DWMA expansion area.

4.17.7.2 CEQA Significance Determinations

Since the actions taken, or not taken, under Alternative 5 would not involve construction of a solar facility and ancillary features, there would be no vegetation impacts under Alternative 5.

4.17.8 Alternative 6: No Project, Exclude Solar Alternative

4.17.8.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. As a result, no solar energy project would be

constructed on the site, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Since the CDCA Plan would be amended to make the area unavailable for future solar energy development, it is expected that the site would remain in its existing condition unless another use is designated in this amendment. As a result, access to the site would not change and existing land uses would continue without any disruptions from construction of solar energy facilities. As a result, none of the impacts to vegetation resources and ephemeral drainage systems from construction, operation, or decommissioning of the Project would occur.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be similar under Alternative 6 as Alternative 1, except it would include a different land area. Under Alternative 6, the land area that would be added to the DWMA is shown in Table 4.17-6.

Table 4.17-6. Acreage to be Modified in Ivanpah DWMA, Alternative 6

Land Area	*Acreage in Land Area*
Current Ivanpah DWMA	*37,280 ac*
Total in Northern Ivanpah Unit	*+ 29,110 ac*
Ivanpah SEGS	*-3,471 ac*
Caltrans JPOE	*-133 ac*
Stateline Solar Project	*0 ac*
Subtotal New Acreage Added to DWMA	***25,506 ac***
Removal of Ivanpah Playa	*-2,997 ac*
Final Total in Modified DWMA	***59,789 ac***

The modification of the boundary of the Ivanpah DWMA would be the same under Alternative 6 as the Proposed Action. However, because no Project would be constructed under Alternative 6 the modification of the boundary of the existing Ivanpah DWMA would not result in an increased potential for the spread of noxious and invasive weeds into the expanded Ivanpah DWMA area. Expansion of the DWMA would have the beneficial effect of protecting special status plants located in the 25,506 acre area added to the DWMA.

4.17.8.2 CEQA Significance Determinations

Since the actions taken, or not taken, under Alternative 6 would not involve construction of a solar facility and ancillary features, there would be no vegetation impacts under Alternative 6.

4.17.9 Alternative 7: No Project, Approve Solar Alternative

4.17.9.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The Project would not be constructed on the project site and the project site would remain vacant in the near-term. *As a result, none of the impacts to vegetation resources and ephemeral drainage systems from construction, operation, or decommissioning of the Project would occur.* Under this alternative, *while* the BLM would not approve the *Project, it* would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the site *in the future*. If this were to occur, it is likely that the construction and

operations impacts to vegetation *and ephemeral drainages* would be similar to those identified under Alternative 1. *However, such impacts are speculative at this time.*

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 7. Land uses associated with the Ivanpah DWMA would continue as they are today. This alternative would have no adverse impact on vegetation resources, but would also not have the beneficial impact of protecting special status plant species and vegetation communities within the proposed DWMA expansion area.

4.17.9.2 CEQA Significance Determinations

Since the actions taken, or not taken, under Alternative 7 would not involve construction of a solar facility and ancillary features, there would be no vegetation impacts under Alternative 7.

4.17.10 Cumulative Impacts

4.17.10.1 Geographic Extent/Context

The geographic scope for the analysis of cumulative impacts related to vegetation resources are the local and regional communities within Ivanpah Valley (Figure 4-1). The analysis of cumulative effects considers a number of variables including geographic (spatial) limits, time (temporal) limits, and the characteristics of the resources being evaluated. The geographic scope of this analysis is based on the nature of the geography surrounding the proposed Stateline project site and the characteristics and properties of each resource. In addition, each project will have its own implementation schedule, which may or may not coincide or overlap with the proposed Stateline Solar Farm's schedule. This is a consideration for short-term impacts from the proposed Stateline project; however, to be conservative, the cumulative analysis assumes that all projects in the cumulative scenario are built and operating during the operating lifetime of the Stateline facility, except where otherwise noted.

4.17.10.2 Existing Cumulative Conditions

Urbanization, population growth, and continuing development pressure have brought about substantial changes to, and effects on, natural resources within the cumulative analysis areas. Consequently, modification, alteration, and/or destruction of vegetation, special status plant species, federal and state jurisdictional areas, and the proliferation of invasive weeds are occurring throughout the region. Future growth and development in the Ivanpah Valley area and within the ranges of the special status plants will likely continue these impacts.

Vegetation communities are largely similar in the analysis area and consist primarily of creosote bush scrub, mixed saltbush, and Dry Lake/Playa associated with the alluvial fan slopes and Ivanpah Dry Lake within Ivanpah Valley. Because the analysis area is desert, there are few wetlands present, and *those that do exist* are limited to small springs in the mountains surrounding Ivanpah Valley. Other jurisdictional waters include Ivanpah Dry Lake (which is *subject to both USACE and CDFW jurisdiction*), and the ephemeral drainages on the alluvial fan (considered to be under CDFW jurisdiction *only*).

The proposed Stateline site supports special status plant species, although none of the species is federal or state listed. The majority of the *geographic area for the analysis of* cumulative

impacts *is similar to the Project site. These surrounding areas consist* of undeveloped lands, and support many of the same special status plant species as are found on the proposed Stateline site.

Invasive weeds are present throughout the analysis area, although their numbers vary depending on the level of land disturbance. Of the 194 plant species that were documented during the 2008/2010/2011 special status plant species surveys of the Project Study Area, nine species were non-native (Baldwin and others 2002). These species include Saharan mustard (*Malcolmia Africana*), London rocket (*Sisymbrium irio*), Russian thistle (*Salsola tragus*), filaree (*Erodium cicutarium*), carpet weed (*Mollugo cerviana*), red brome (*Bromus madritensis*), June grass (*Bromus tectorum*), foxtail barley (*Hordeum murinum*), and Mediterranean grass (*Schismus barbatus*). Most of these species were also identified in vegetation surveys conducted for the Ivanpah SEGS facility, Silver State solar, and the EITP.

4.17.10.3 Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects, various BLM authorized actions/activities, proposed or approved projects within the County's jurisdiction, and other actions/activities that the agencies consider reasonably foreseeable. Table 4.1-2 summarizes the cumulative projects that would have the potential to combine with the Proposed Action and result in cumulative impacts to vegetation. Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA, or will do so prior to approval. Even if environmental review has not been completed for the cumulative projects described in Table 4.1-2, their effects were considered in the cumulative impacts analysis in this section of the EIS/EIR.

Projects currently under construction in the vicinity of the proposed facility include the Ivanpah SEGS solar facility (3,471 acres), and the EITP. Proposed projects in the vicinity of the proposed facility that would have potentially adverse impacts to vegetation include the Southern Nevada Supplemental Airport, Desert Xpress high speed passenger rail line, Silver State Phase 2 solar facility, and the Calnev Pipeline Expansion Project.

4.17.10.4 Cumulative Impacts Associated with Proposed Action

Construction, operations and maintenance, and decommissioning activities from all of the past, present, and reasonably foreseeable future projects would result in temporary and *long-term* losses of native vegetation. Despite measures to protect vegetation and remediate losses, construction of the proposed Stateline would cause both temporary (during construction from vegetation clearing) and *long-term* (replacement of vegetation with project features such as solar arrays and *long-term* access roads) significant impacts to vegetation communities, special status plant species, and CDFW jurisdictional drainages. Quantitative impact information for these resources is not available for many of these projects. For those where it is available, it is provided in Table *4.17-7* below.

Construction

Impacts to six special status plant species (desert pincushion, Mojave milkweed, Parish club-cholla, small-flowered androstephium [pink funnel lily], Rusby's desert mallow, and Utah vine milkweed) would result from construction of the Proposed Action. In the aggregate, the reasonably foreseeable projects within the cumulative impacts analysis area would impact the

same special status plant species as the Proposed Action, as well as additional species. Survey data providing the total number of occurrences of each of the special status plant species in the area are not available. However, the total undeveloped land area within the Ivanpah DWMA, including the proposed new addition of the Northern Ivanpah Unit, is more than 59,000 acres. An additional 97,000 acres of similar undeveloped habitat is present in the Nevada portion of Ivanpah Valley. These areas are assumed to have a similar distribution of special status plant species as the Proposed Action area. The total land area associated with the cumulative development projects located on similar alluvial fan type-setting in Ivanpah Valley is shown in Table 4.17-8. The development projects are expected to impact vegetation resources on approximately 14,000 acres out of the 157,000 acres of similar undeveloped land in Ivanpah Valley, or approximately 9 percent. The magnitude of the cumulative impact to native vegetation communities is small given that there are approximately 157,000 acres of undeveloped desert lands within Ivanpah Valley. The contribution of the Stateline project to this impact to vegetation communities is 2,023 acres, which amounts to approximately 1 percent of the undeveloped desert lands in the cumulative impacts analysis area.

The proposed developments near the project site include thousands of acres of projects that would have the potential to drastically increase the total area of *long-term* vegetative disturbance within Ivanpah Valley. *Cumulative impacts would not simply be associated with construction activities, but with the removal of vegetation and maintenance of the site without vegetation throughout the operations and decommissioning phases. Therefore, cumulative impacts are not magnified through concurrent construction periods of the various projects.*

Operations and Maintenance

It is expected that all of the cumulative projects described above would be operational at the same time as the Proposed Action. As a result, there *would* be long-term impacts during operation of those cumulative projects related to vegetation.

The Proposed Action would contribute to these possible long-term operational cumulative impacts since thousands of acres of land are proposed for solar energy and other developments in the Ivanpah Valley area. The conversion of these lands *through the Proposed Action and other projects* would result in the direct, *long-term* loss of native and sensitive vegetation communities, including special status plant species.

Decommissioning

The decommissioning of the Proposed Action is expected to result in adverse impacts similar to those identified for construction. Disruptions from the decommissioning activities associated with other renewable energy and other projects would have the potential to combine with those of the Proposed Action, which could result in an adverse cumulative impact. However, the Proposed Action's contribution to cumulative impacts to vegetation during decommissioning would be temporary. Following decommissioning, the land area associated with the Proposed Action would become available for other uses, and adverse impacts would cease.

Table 4.17-7. Cumulative Impacts to Vegetation Resources

Resource	Stateline Proposed Action	Ivanpah SEGS	EITP	Silver State	JPOE
Disturbance (acres)					
Temporary	4	321	316	94	0
Long-term	2,023	3,471	55	2,967	133
Vegetative Communities (acres)					
Mojave creosote bush scrub	2,023	3,492	243	*~2,967*[1]	133
Mixed saltbush scrub	0	0	13.5	*~0*	0
Dry Lake Bed/Playa	0	0	12.1	*~0*	0
Black bush scrub	0	0	1.4	*~0*	0
Black bush scrub-Joshua tree woodland	0	0	8.4	*~0*	0
Creosote scrub	0	0	29.6	*~0*	0
Disturbed creosote scrub	0	0	1.2	*~0*	0
Developed	0	0	53	*~0*	0
Disturbed	0	0	5.3	*~0*	0
Undetermined	0	0	443	*~0*	0
Special-Status Species Plants (number of occurrences/individuals)					
Desert pincushion	8	8	NR	0	0
Mojave milkweed	10	16	NR	0	0
Parish club cholla	9	5	NR	0	0
Small-flowered androstephium	48	0	NR	0	0
Rusby's desert mallow	3	7	NR	0	0
Utah vine milkweed	4	0	NR	0	0
Foxtail cactus	0	0	NR	0	0
Nine-awned pappus grass	0	3	NR	0	0
Death Valley ephedra	0	0	0	100's	0
***Jurisdictional Waters* (acres)**					
CDFW Jurisdictional Ephemeral Drainages	146	198	5	NA	NR
Waters of the US/CDFW Jurisdictional Lake	0	0	13.9	NR	0

NR = Specific numbers not reported (For EITP, assumed in the EIS to be negligible)

NA = Not applicable

1 – The Silver State EIS does not provide specific acreages, but reports that the Project site is "primarily Mojave creosote bush-white bursage desert scrub, with small inclusions of several Mojave wash scrub ephemeral drainages".

Table 4.17-8. Acreage of Vegetation Disturbance Associated with Cumulative Projects in Combination with Proposed Action and Alternatives[1]

Project	***Proposed Action (ac)***	***Alt. 2 (ac)***	***Alt. 3 (ac)***	***Alt. 4 (ac)***	***Alt. 5 (ac)***	***Alt. 6 (ac)***	***Alt. 7 (ac)***
Stateline	*2,143*	*2,385*	*1,685*	*1,766*	*0*	*0*	*0*
Ivanpah SEGS	*3,471*	*3,471*	*3,471*	*3,471*	*3,471*	*3,471*	*3,471*
Desert Xpress	*2,424*	*2,424*	*2,424*	*2,424*	*2,424*	*2,424*	*2,424*
Molycorp	*2,222*	*2,222*	*2,222*	*2,222*	*2,222*	*2,222*	*2,222*
Calnev Pipeline	*180*	*180*	*180*	*180*	*180*	*180*	*180*
Kern River Lateral	*104*	*104*	*104*	*104*	*104*	*104*	*104*
JPOE	*133*	*133*	*133*	*133*	*133*	*133*	*133*
EITP	*480*	*480*	*480*	*480*	*480*	*480*	*480*
Silver State Solar	*2,967*	*2,967*	*2,967*	*2,967*	*2,967*	*2,967*	*2,967*
Total	***14,124***	***14,366***	***13,666***	***13,747***	***11,981***	***11,981***	***11,981***

1 – Note that total disturbance data are available for most projects, even if specific species counts and acreage of vegetation communities are not available. Therefore, the project lists in Tables 4.17-7 and 4.17-8 are different.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the existing Ivanpah DWMA would have an effect on future land uses that are authorized within the newly added portions of the DWMA. The land use restrictions that are currently applied to the 37,280 acre Ivanpah DWMA, which are discussed as part of the evaluation of the Proposed Action, would be extended to cover an additional *23,363* acres within the Northern Ivanpah Valley Unit. These land use restrictions include a cumulative 1 percent total surface area disturbance within the DWMA. Therefore, expansion of the DWMA would have the beneficial effect of protecting special status plants located in the *23,363* acre area added to the DWMA, and would increase protections for special status plants species within their cumulative analysis area.

4.17.10.5 CEQA Significance Determinations

Veg-1

Special Status Plant Species

As discussed in Section 4.17.3.1, impacts to six special status plant species (desert pincushion, Mojave milkweed, Parish club-cholla, small-flowered androstephium [pink funnel lily], Rusby's desert mallow, and Utah vine milkweed) would result from proposed Stateline construction. The total number of occurrences that would be impacted are as follows: 8 desert pincushion occurrences out of 17 present in the Project Study Area (47 percent), 10 Mojave milkweed occurrences out of 15 present in the Project Study Area (67 percent), 9 Parish club cholla occurrences out of 27 present in the Project Study Area (33 percent), 48 Small-flowered androstephium occurrences out of 91 present in the Project Study Area (53 percent), 3 Rusby's desert mallow occurrences out of 5 present in the Project Study Area (60 percent), and 4 Utah vine milkweed occurrences out of 12 present in the Project Study Area (33 percent). Because

operations and decommissioning activities would occur within the same project footprint, these activities would not directly impact any additional special status plant species.

In the aggregate, the reasonably foreseeable projects within the cumulative impacts analysis area would impact the same special status plant species as the proposed project, as well as additional species. Survey data providing the total number of occurrences of each of the special status plant species in the area are not available. However, the total undeveloped land area within the Ivanpah DWMA, including the proposed new addition of the Northern Ivanpah Unit, is more than 59,000 acres. An additional 97,000 acres of similar undeveloped habitat is present in the Nevada portion of Ivanpah Valley. These areas are assumed to have a similar distribution of special status plant species as the Proposed Action area. The total land area associated with the cumulative development projects located on similar alluvial fan type-setting in Ivanpah Valley is shown in Table *4.17-8*. The development projects are expected to impact vegetation resources on approximately 14,000 acres out of the 157,000 acres of similar undeveloped land in Ivanpah Valley, or approximately 9 percent.

As shown in Table *4.17-7*, the Proposed Action and other cumulative projects each will affect a small number of individual special-status species plants. *Therefore, cumulative impacts to special status plants would be less than significant.* Mitigation measures MM-Veg-1, MM-Veg-2, and MM-Veg-3 for the proposed Stateline facility include avoidance, restoration, and compensation for impacts to special status plant species. These measures would *further* reduce the potential impact of the proposed project on special status plants. The other cumulative projects will be subject to similar mitigation measures to mitigate their impacts on special status plants. Given that the other projects also do not affect large numbers of individual plants and would be subject to similar mitigation measures, the other cumulative projects each would be expected to have impacts that can be reduced to less than significant. Therefore, although there would be a cumulative effect because of the loss of individual plants by multiple projects, the cumulative impact would be less than significant. Given the amount of undeveloped lands within the cumulative analysis impact area and wide distribution and population sizes of the plant species found on the proposed Stateline site, the contribution of the Stateline project would not be cumulatively considerable.

Invasive and Noxious Weeds

Proposed Stateline facility construction, operations, and decommissioning activities would result in ground disturbance which has the potential to result in the introduction or spread of invasive weed species. Invasive weed species exist within the cumulative impacts analysis area as a result of natural events such as wildfires, as well as from past and ongoing development. The proposed Stateline facility and the reasonably foreseeable projects within the cumulative impacts analysis area have the potential to introduce or spread invasive weed species throughout the cumulative impacts analysis area.

The proposed Stateline facility and the other reasonably foreseeable projects would be required to mitigate impacts associated with invasive weed species through the preparation and implementation of Weed Management Plans and Weed Control Plans. Implementation of mitigation measure MM-Veg-4, (*Integrated* Weed Management Plan) would reduce the potential impacts associated with the introduction and spread of invasive weed species for the proposed Stateline facility, and the contribution from the proposed Stateline project to the cumulative impact would not be cumulatively considerable. As invasive and noxious weed management would be addressed as part of the reasonably foreseeable cumulative projects' mitigation for potential impacts from invasive weeds, the overall cumulative impact would be less than significant under CEQA.

Dust

Proposed Stateline facility construction, operations, and decommissioning activities could result in increased levels of airborne dust that may settle on surrounding vegetation. Increased levels of dust on plants can significantly impede the plants' photosynthetic capabilities and degrade the overall vegetation community. The reasonably foreseeable projects within the cumulative impacts analysis area also have the potential to result in increased levels of airborne dust.

The proposed Stateline facility and the reasonably foreseeable projects would be required to mitigate impacts associated with fugitive dust through the preparation and implementation of Dust Control Plans, which include regular watering of access roads, staging areas, and other temporary use areas during clearing, grading, earth-moving, excavation, or other construction activities and establishing a maximum speed limit on dirt access roads to reduce the amount of airborne dust generated. Implementation of mitigation measure MM-Air-1 for the proposed Stateline facility, combined with the reasonably foreseeable cumulative projects' mitigation for impacts from fugitive dust, would reduce the impacts on surrounding plants and vegetation communities and would render the cumulative impact less than significant under CEQA.

Veg-2

Vegetation Communities

The reasonably foreseeable projects within the cumulative impacts analysis area would likely impact the same types of vegetation communities as the proposed Stateline facility. As shown in Table *4.17-8*, the cumulative projects would disturb a total of approximately 14,000 acres of vegetation within Ivanpah Valley. Most of this is expected to consist of Mojave creosote bush scrub, which is prevalent on the slopes of the alluvial fans in Ivanpah Valley. *Long-term* losses and temporary impacts to vegetation associated with the proposed Stateline facility, combined with losses associated with past, present, and future projects, are considered a cumulative effect because these combined impacts have potential to reduce the extent of those communities within the cumulative impacts analysis area.

The magnitude of the cumulative impact to native vegetation communities is small given that there are approximately 157,000 acres of undeveloped desert lands within Ivanpah Valley. The Stateline project's *long-term* impact to 2,023 acres of vegetation communities amounts to approximately 1 percent of the undeveloped desert lands in the cumulative impacts analysis area. The proposed Stateline facility and the other projects would be required to mitigate impacts to sensitive vegetation communities, and a sufficient amount of land is available to provide compensation for those projects' impacts. Implementation of mitigation measures MM-Veg-1, MM-Veg-2, and MM-Veg-3 would help to reduce the proposed Stateline facility's impacts to sensitive vegetation communities. Similar mitigation measures for the reasonably foreseeable cumulative projects would render the overall cumulative impact less than significant under CEQA.

Jurisdictional Drainages

Construction of the proposed Stateline facility would result in impacts to CDFW jurisdictional drainages through vegetation removal and site grading. Despite measures to protect jurisdictional resources and remediate losses, construction of the proposed facility would cause *long-term* significant impacts to 146 acres of ephemeral drainages. The reasonably foreseeable projects within the cumulative impacts analysis area would likely impact the same types of jurisdictional resources as the proposed Stateline facility. Most of the projects in Table *4.17-8*

would impact less than 10 acres of jurisdictional drainages, with the exception of Ivanpah SEGS, which would remove approximately 198 acres of Waters of the State.

Impacts to jurisdictional resources associated with the proposed Stateline facility, combined with impacts associated with past, present, and future projects are considered a cumulative effect because the impacts have a potential to reduce the extent of those jurisdictional resources within the cumulative impacts analysis area.

It should be noted that the magnitude of the project's cumulative impact to jurisdictional features is small given that there is approximately 157,000 acres of alluvial fan habitat*, all of which includes a similar density of ephemeral drainages.* The proposed Stateline facility and the other reasonably foreseeable projects would be required to mitigate impacts to jurisdictional resources, and a sufficient amount of land is available to provide compensation for those projects' impacts to jurisdictional resources. Implementation of mitigation measures MM-Veg-6 (*Streambed Alteration Agreement*) for the proposed Stateline project, and similar mitigation requirements for the other reasonably foreseeable cumulative projects, would render the overall cumulative impact to jurisdictional resources less than significant under CEQA.

4.17.10.6 Cumulative Impacts from Alternatives

Alternative 2: 2,385 Ac Alternative

Potential cumulative impacts to vegetation under Alternative 2 would be 14,366 acres, or 242 acres more than the Proposed Action. Therefore, the cumulative impacts associated with Alternative 2 would be *similar to but slightly* higher than those described above for the Proposed Action.

Revised Alternative 3: ***1,685*** Ac Alternative

Potential cumulative impacts to vegetation under *Revised* Alternative 3 would be *13,666* acres, or *458 acres less than* the Proposed Action. Therefore, the cumulative impacts associated with *Revised* Alternative 3 would be *similar to, but lesser in magnitude than,* those described above for the Proposed Action.

Alternative 4: Reduced Acreage Alternative

Potential cumulative impacts to vegetation under Alternative 4 would be 13,747 acres, or 377 acres less than the Proposed Action. Therefore, the cumulative impacts associated with Alternative 4 would *similar to, but lesser in magnitude than,* those described above for the Proposed Action.

Alternative 5: No Action Alternative

Alternative 5, the No Action Alternative, would not contribute to cumulative impacts to existing native or sensitive vegetation communities.

Alternative 6: No Project, Exclude Solar Alternative

By denying the solar energy application, Alternative 6 would allow existing land uses to continue on the project site as they are today. Therefore, this alternative would not contribute to *cumulative impacts to existing native or sensitive vegetation communities.*

Alternative 7: No Project, Approve Solar Alternative

By denying the solar energy application, Alternative 7 would allow existing land uses to continue on the project site as they are today. *Therefore, this alternative would not contribute to cumulative impacts to existing native or sensitive vegetation communities.*

4.17.11 Mitigation Measures

MM-Veg-1: Minimize Impacts to Vegetation Communities. Final engineering of the project shall reduce the size of the temporary construction work areas where possible and minimize the impacts to sensitive vegetation communities. Prior to the start of construction, work areas (including, but not limited to, staging areas, access roads, and sites for temporary placement of construction materials and spoils) shall be delineated with orange construction fencing or staking to clearly identify the limits of work and shall be verified by the biological monitor (MM-Veg-2) prior to ground disturbing activities. Fencing/staking shall remain in place for the duration of construction. Spoils shall be stockpiled in disturbed areas lacking native vegetation or where habitat quality is poor. To the extent possible, disturbance of shrubs and surface soils due to stockpiling shall be minimized. All disturbances, vehicles, and equipment shall be confined to the flagged areas.

When feasible, construction activities shall drive and crush over vegetation rather than grading, in order to preserve the root systems. Construction equipment would drive over and crush native plants to minimize impacts to the roots of desert shrubs. Drive and crush is expected to reduce the recovery time of desert scrubs within the temporary construction areas.

MM-Veg-2: Designated Biologist. Prior to ground disturbing activities, one or more individuals shall be designated by the Applicant and approved by the BLM and CDFW) as a Designated Biologist (i.e., field contact representative). A Designated Biologist will be assigned for the period during which on-going construction and post-construction monitoring and reporting by an approved biologist is required, such as annual reporting on vegetation restoration. The Designated Biologist shall have the authority and responsibility to halt activities that are in violation of the mitigation measures. To avoid and minimize effects to biological resources, the Designated Biologist(s) shall:

- Notify BLM's Authorized Officer and the wildlife agencies at least 14 calendar days before initiating ground disturbing activities.
- Immediately notify BLM's Authorized Officer and the wildlife agencies, in writing, if the project Applicant does not comply with any of the mitigation measures.
- Conduct compliance inspections at a minimum of once per month during on-going construction after clearing, grubbing, and grading are completed, and submit a monthly compliance report to BLM's Authorized Officer until construction is complete.

Prior to project initiation, the Designated Biologist(s) shall develop and implement a Worker Education Awareness Program (WEAP) and shall be available in English and Spanish. Wallet-sized cards summarizing the information will be provided to all construction and O&M personnel. The WEAP shall include the following:

- An explanation of the function of flagging that designates authorized work areas.
- An explanation of the sensitivity of the vegetation communities and special status plant species within and adjacent to work areas.

- The importance of avoiding the introduction of invasive weeds onto the proposed Stateline site and surrounding areas.

MM-Veg-3: *Pre-Construction Soil and Plant Salvage.*

Prior to construction, the Applicant shall implement their Vegetation Management Plan (First Solar 2012f). The Plan would be amended to include the following requirements:

Soil Characterization and Preservation

A soil baseline characterization shall be conducted and reported to the BLM prior to site disturbance. The characterization shall include:

a. Profile description of three representative pedons. (A pedon is the smallest three dimensional sampling unit displaying the full range of characteristics of a particular soil and typically occupies an area ranging from about 1 to 10 square yards [Brady and Weil, 2002]).

b. Characterization of surface application (that is, is desert pavement or cryptogamic crust present). Description of cryptogamic crust shall include major groups of organisms identified at the site (filamentous cyanobacteria, other cyanobacteria, mosses, lichens, liverworts) and the characteristics by which they were identified.

c. Documentation of soil macro-invertebrates (that is, presence of ants, termites, and other significant macro-invertebrates)

d. Soil texture (that is, percent sand, silt, and clay), along with a reference to a widely accepted method for making the determination.

e. Bulk density, along with a reference to a generally accepted method for making the determination.

f. Fertility (that is, nutrient status, electrical conductivity, sodium adsorption ratio), along with methods by which composite samples were collected and the laboratory methods used to determine these properties. Composite samples shall contain equal contributions from at least six randomly-located collection points within the soil donor area.

g. Organic matter content and total carbon and nitrogen content, along with a reference to generally accepted methods for making the determinations.

Soil compaction shall be determined by measurement of bulk density in grams per cubic centimeter (or numerically equivalent units). Bulk density may be determined by any of several standard measurements, but the method used must be referenced to a widely-accepted soil methodology publication. In no case shall soil be compacted to bulk density that exceeds 1.6 g/cc except where no planting is to take place. Penetrometer measurements are not a substitute for bulk density measurements.

Once characterized, topsoil for this project shall be salvaged and stored within the project area. Topsoil is defined as the soil volume from the original surface to 8 inches in depth. The upper 1/4 inch may be collected separately to preserve biological crust organisms. Topsoil may not be distinguishable by color or organic content but shall have most fine roots during the active growing season. Soil shall be collected, transported, and formed into stockpiles only while the soil is dry. The vegetation in place at or immediately before topsoil collection shall be healthy native vegetation with less than 15 percent absolute cover of exotic weed growth. Soil

occupied by vegetation of high plant diversity shall be given priority over soil occupied by low diversity native vegetation. Soil may be collected with a front loader, bulldozer, or scraper and transported to storage areas by front loader, dump truck, or scraper. The equipment transporting the soil may not travel across the stockpile more than the minimum number of times required to build the soil to its intended depth. The depth of the stockpiles shall not exceed 4 feet in the case of sandy loam or loamy sand soils. Topsoil stockpiles shall be kept dry and covered if no vegetation is introduced. If native vegetation is grown on the stockpiles to increase seeds and soil organisms, no cover is required. Artificial watering may be provided at the operator's option.

Stockpiled topsoil shall be used to grow native plant species for the purpose of producing native seeds and building beneficial microorganisms in the soil volume. All native plant species encountered in the vegetation surveys shall be included in the growing rotation on the stockpiles. Most growing space needs to be dedicated to the species for which the most seeds shall be required. At least half by area of the growing area during each growing cycle shall be dedicated to plant species known to be good mycorrhizal host plants. Members of the families Chenopodiaceae and Amaranthaceae should be limited to less than half the area of the soil stockpiles, with the other half occupied by known mycorrhizal host plant species.

Biological Crust Characterization and Preservation

Soil biological crust is defined here as a mixture of organisms that occupy and protect the surface of the soil in most desert ecosystems. The organisms often include filamentous and non-filamentous cyanobacteria, mosses, lichens, liverworts and fungi. Soil biological crust shall be preserved by collecting the upper 1/4 inch of topsoil from areas to be graded. The applicant shall collect specific areas known to contain biological crust organisms or collect upper soil from the entire area. Collections are to emphasize filamentous cyanobacteria; but other cyanobacteria, mosses, lichens, and liverworts are also considered valuable contributors to the soil biological crust and shall be important in protecting against erosion and reducing weed invasion. Soil surface crust shall be air dried and stored dry in a shaded location in containers that allow air movement, such as loose-weave fabric bags. In no case may the stored crust be subject to wetting or direct sunlight during storage. All containers shall be clearly labeled with date and location of original collection; name and contact information of persons responsible for identifying suitable material to collect; and the persons who collected, stored, and maintained collections.

Soil biological crust shall be re-applied at the time of replanting by crumbling the stored material and broadcasting it on the surface of the soil. Approximately 10 percent of the stored material shall be broadcast on topsoil storage areas among plants being grown for seed and soil microorganisms. When the growing cycle progresses to new planting, the soil supporting biological crust shall be collected and stored by the same methods prescribed for collections from the original soil, in clearly labeled bags or other suitable containers.

Succulent Transplant

The majority of the succulent plants located in areas to be dragged, rolled or spot graded, or above mowing height shall be salvaged and transplanted into a nursery area. Succulents to be transplanted into the nursery area shall be placed in their same compass orientation as they were in their original location. The salvaged plants also shall be kept in long-term soil stockpiles, along with natives grown on the stockpiles, to keep the soil biota fresh.

Succulent transplants done during preparation of the project site shall be fully documented and serve as trials of methods to be used during plant salvage on the project site. Records shall be maintained for each transplanted specimen including species, height, number of branches or pads as appropriate, donor location by UTM coordinates, methods used to remove, transport and store the plant, period of temporary storage, location, facility description and planting medium used for storage, and frequency of watering during storage. The records shall include plant application of planting at the storage area, and quarterly during storage until such time as each plant is placed in the field, or dies.

Seed Collection

Seed collection shall be carried out within the project area. Future seed collection in the project vicinity shall be negotiated separately with BLM. Collection areas shall be within 10 miles of the boundaries of the project site and shall be on similar terrain, soil, exposure, slope and elevation to the project site. Seed collection guidelines shall conform to all laws and regulations in effect at the time of collection and shall follow the guidelines for native seed collection provided by California Native Plant Society. Seed collection shall include all plant species known to be removed from the facility. If insufficient seeds are provided by "seed farming" and collection within 10 miles of the site, BLM may approve collection from a greater distance provided other environmental factors at the collection site are good matches to the project site.

MM-Veg-4: *Integrated* Weed Management Plan. The Applicant shall implement *their Integrated* Weed Management Plan to control non-native invasive weeds, as developed in cooperation with the BLM and County of San Bernardino. The *Integrated* Weed Management Plan for the project shall include a risk assessment of the invasive weed species currently known within the proposed Stateline site, procedures to control their spread on site and to adjacent off-site areas, and procedures to help minimize the introduction of new weed species. The *Integrated* Weed Management Plan shall be implemented prior to, during, and following the completion of construction for the life of the project.

MM-Veg-5: Revegetation of Temporary Disturbed Areas *and Project Site*. *The full project site* shall be revegetated according to the Applicant's Closure, Decommissioning, and Reclamation Plan (First Solar 2012d) *following project decommissioning. In addition, any areas temporarily disturbed during construction would be re-vegetated, using the same methods, as soon as construction is completed. The Plan would be amended to include the following requirements:*

Topsoil Application

Stored topsoil would be reapplied as a layer over decompacted subgrade material as a means of implementing the restoration program. The topsoil layer shall be a minimum of 3 inches in depth. The topsoil layer shall be bonded to the subgrade with a lightly-loaded sheepsfoot roller, a land imprinter, or other implement that interlocks material from the two layers without causing bulk density in excess of 1.6 grams per cubic centimeter. Seeds may be distributed concurrently with layer bonding if a land imprinter is employed for both purposes.

Seed Application

The vegetation to be introduced to the site shall consist entirely of plant species native to the northern Mojave Desert. No exotic plant species can be included on the seed lists nor

introduced with native species. Exotic species, regardless of their presence in the original vegetation, shall not be counted as successful vegetation establishment.

Batches of seeds collected or produced for this project shall be tested by a certified seed testing laboratory that shall provide for each batch of seeds determinations of purity, germination, and seed count. Seeds not sorted by plant species, including collections from under shrubs, from depressions in the soil, and from harvester ant caches, shall be used to supplement defined seed batches but shall not be included in the claim of known seed applications.

Seed application would be done by methods that provide good soil contact and protection from granivores. Information about the imprinting process and model specifications for imprinting contracts are available in St. John and Dixon (1996). Seed shall be applied by methods that provide good seed-soil contact. The most successful methods in similar conditions are land imprinting or broadcasting followed by a roller that shall press seeds into the soil but not cause heavy compaction.

Mulch application is done at the option of the operator. Mulch application to the soil needs to consist of local non-weedy materials, the collection of which is incidental to other activities onsite. In no case may mowing or grading of native vegetation be carried out for the sole purpose of generating mulch. Mulch needs to be applied only to the soil surface unless the soil has already been inverted or severely disturbed through other procedures. Materials of relatively high nitrogen content, including alfalfa hay, may not be applied.

Mycorrhizal inoculation shall be carried out in all planting areas having fewer than one spore per cubic centimeter of topsoil, where topsoil is defined as soil between the surface and 8 inches depth, or to bedrock if the soil is less than 8 inches in depth. Spore counts shall be carried out by methods given in Johnson et al. or other accepted methodology. Inoculation shall result in a minimum of one spore per cubic centimeter of soil as defined for initial spore counts. No inoculation shall be required in areas where the applicant is able to demonstrate that all plant species on the list of final desired vegetation are known to be non-host species. This condition might be found in saline or very alkaline soils.

Succulent Transplanting

Revegetation following decommissioning would include re-transplantation of succulents within the transplant areas. Equipment and methods to be used would be the same as those used for the initial removal and transplanting from the project area.

Performance Monitoring

Qualitative monitoring shall be conducted in years one to 10 at all restored areas. The goal of qualitative monitoring is to document conditions and evaluate the need for remediation to ensure the restored areas are progressing toward the performance success standard.

During monitoring, the success parameters (cover, density, and richness of annual and perennial vegetation) shall be estimated. Other site characteristics to be monitored in addition to the success parameters include soil erosion, natural recruitment of native plant species, reproduction, exotic plant species abundance, animal use, and pattern of established vegetation (i.e., presence of large interspaces). Lack of erosion at a site provides evidence that soils have been adequately stabilized, while natural recruitment and/or reproduction indicate that important functional processes are in place that initiate regeneration, such as pollination and seed dispersal. Exotic species potentially compete with native perennial species, and relatively high abundance can have a negative effect on site conditions. Evidence of animal use is an indicator that habitat conditions are being restored. Patterns of established vegetation help

determine whether large bare areas are indicative of site conditions or simply a result of the patchiness of surrounding vegetation.

Based on monitoring observations, the restored site shall be given a success rating of Exceeds Objectives, Acceptable, Unacceptable, or Severely Deficient, and determinations shall be made regarding remediation activities, as applicable. Remediation activities shall include reseeding the site, spot seeding, adding transplants, erosion control, and fencing. Recommendations may include waiting another year or two prior to any remediation to allow for favorable germination/establishment conditions, with approval of the BLM.

Photography shall be used to help document the status of recovery at all sites. Photo points shall be established and photographs shall be taken prior to disturbance, when restoration efforts are completed, and during each monitoring visit.

Monitoring shall be scheduled and reported to the BLM once per month during the first growing season after seed application, switching to once per quarter starting in July after seed application. Monitoring may be reduced to once per year in late March through mid-May of each year after the second growing season.

Performance monitoring shall be conducted annually during the spring flowering season, between mid-March and mid-May to assess restoration performance. Performance monitoring surveys of all vegetation on the subject sites shall be carried out in a manner able to detect project success. The entire project area shall be divided into vegetation types as described by Sawyer and Keeler-Wolfe. The boundaries of each vegetation type shall be compared with the baseline survey maps. Each vegetation type shall have soil, terrain, exposure, elevation, and slope clearly indicated. For each vegetation type, a list of perennials and appropriate annuals shall be provided. Surveys shall be performed at a season when the year's annuals are identifiable; generally from early March through late April. Survey methodology should emphasize accuracy rather than precision. BLM shall accept rapid methods such as the step-point method (Bonham 1988) provided transects are laid out in a manner that captures the true composition of the vegetation. The combined length of step-point transects in each vegetation type shall approximate the square root of the area of the vegetation type or at least 400 intercepts and shall be laid out to give unbiased representation of all portions of the vegetation type. Vegetation need not be divided into herb and shrub layers as long as all species intercepted by points are included in the survey. Additional species not encountered on the transects shall be recorded separately on a diversity list.

Restoration shall be considered successful if plant cover, density, and richness of native perennial vegetation (mainly dominant shrubs) is equal to or exceeds 70 percent for these parameters in undisturbed reference areas. A minimum of two undisturbed reference/control sites in the western Ivanpah Valley area shall be selected in cooperation with BLM.

MM-Veg-6: Streambed Alteration Agreement. Given the anticipated impacts to CDFW jurisdictional areas, the Applicant would be required to obtain a Streambed Alteration Agreement from the CDFW in accordance with Section 1602 of the California Fish and Game code. This permit would include mitigation measures that would be implemented by the Applicant.

MM-Veg-7: Restoration of Area West of Whiskey Pete's*. The Applicant shall perform restoration of a 6.4-acre area to the west of Whiskey Pete's Hotel/Casino parking lot, entirely within California, to mitigate for ongoing soil compaction and vegetation loss from cumulative projects in the area.*

Restoration of the impacted area shall include the physical modifications necessary to return the area to a state approaching pre-disturbance conditions. Restoration steps shall include ripping to decompact the soil, vertical mulching, relocation of native shrubs, removal of a small stand of Russian thistle and establishing a single access route from the hotel/casino parking lot through the disturbed area.

Small to medium-sized boulders shall be transported from nearby areas using small excavating equipment. Vertical mulching, or relocation of dead vegetation and other organic material, into the area shall be performed with hand equipment or excavating equipment. This material, as well as live shrubs for replanting, shall be gathered from areas to be disturbed within the Stateline Solar Farm project area.

Only as many plants as needed to mask the restoration area shall be used, and shall not exceed 15 percent of the plants in the surrounding area. Transplanted plants shall consist solely of those species that are common in the surrounding plant community (e.g., creosote bush [Larrea tridentata], cheesebush [Ambrosia salsola], burrobush [A. dumosa], four-winged saltbush [Atriplex canescens] cattle spinach [Atriplex polycarpa], Mojave yucca [Yucca spp.schidigera] and succulents [cholla, club cholla, barrel cactus, hedgehog cactus, pincushion cactus]). To achieve replanting, a hole of adequate size to accommodate the root mass of the shrub shall be manually excavated, and the shrub shall be placed in the hole with care to minimize damage to its roots. Caution shall be exercised to minimize and, where possible, eliminate crushing of vegetation during these activities, consistent with the restoration objectives of the project. Water shall be used to water relocated live shrubs after planting. Water shall be supplied by a water truck or from a water tank carried on a utility truck. The crew for the reclamation effort shall consist of not more than 10 persons including supervisory staff and monitors. The equipment that may be used shall consist of pickup trucks, flat-bed 2½ ton truck and trailer, water truck, small excavating equipment (such as backhoe or bobcat) and a skip loader.

Daily preconstruction safety meetings shall take place and all activities shall adhere to a site-specific health and safety plan.

The following measures shall be followed to avoid impacts during the restoration activities:

- *Dust Control. Dust control measures shall be implemented to minimize fugitive dust and vehicle emissions. Water shall be applied to dirt surfaces to minimize visible dust. Rehabilitation activities shall not be conducted during high wind warnings. Work shall be suspended if watering is insufficient to prevent visible dust. Vehicles shall be washed if visible dust accumulates on the outside or undercarriage. Motorized vehicles and equipment shall be kept in good operating condition per manufacturer specifications and not allowed to idle.*
- *Invasive Non-Native Weed Species. To the extent feasible, the spread of invasive non-native weed species shall be avoided by clean vehicles/equipment and limiting the area of disturbance. To limit the potential for the spread of noxious weeds, before entering the proposed work area, project vehicles shall be clean. All vehicles shall be inspected daily prior to entering the work area to ensure that they are free of mud, dirt, and vegetation. Those not clean shall be required to be washed at an offsite vehicle wash station before entering the proposed work area. Biological Monitors shall inspect visible restoration segment prior to ground disturbance activities for presence of target noxious weeds.*
- *Wildlife. To avoid impacts to sensitive biological resources, biological monitoring of all rehabilitation shall be performed during implementation of the proposed activities. All workers shall be trained to recognize desert tortoise and other important sign, and to*

notify the Biological Monitor of any tortoise sign observations. The approved Biological Monitor shall remain onsite during restoration activities to monitor for compliance with federal agency requirements. The Biological Monitor shall have the authority to stop work in the immediate vicinity of a resource in jeopardy, if necessary. Biological Monitors shall assure that all project-generated trash and food items are placed in closed containers and removed daily. The proposed project activities shall limit the disturbance area to the minimum required to perform the work. Project personnel shall carefully check under parked vehicles and equipment for desert tortoises before operation. A USFWS-approved Authorized Biologist shall only move desert tortoises found in imminent danger to a location away from danger and in accordance with the tortoise handling procedures described in the Guidelines for Handling Desert Tortoise During Construction Projects (Desert Tortoise Council, 1994). In the event of a relocation or observation of a recently dead or injured listed species, the Biological Monitor shall notify the Designated Biologist, who shall notify BLM's Authorized Officer and USFWS immediately by phone and in no event later than noon on the business day following the event, if it occurs outside normal business hours, so that the agencies can determine what further actions, if any, are required to protect listed species. The Designated Biologist shall prepare written follow-up notification via FAX or electronic communication to these agencies within 2 calendar days of the incident and include the following information, as relevant: the date, time, location, circumstances of the incident, and the name of the approved veterinary facility where the animal was taken.

- *Cultural Resources. Protection measures shall be implemented to mitigate any potential adverse impacts caused by inadvertent discovery of buried cultural resources during project execution. These measures include: (1) designation of a cultural resources specialist to be on-call to investigate any cultural resources finds made during proposed activities; (2) implementation of a construction worker training program; (3) procedures for halting work due to inadvertent discovery of archaeological deposits or human remains; (4) procedures for evaluating an inadvertent archaeological discovery; and (5) procedures to mitigate adverse impacts on any inadvertent discovery of National Register of Historic Places eligible archaeological resources.*
- *Monitoring and Maintenance. Upon completion, maintenance activities shall consist of irrigation of transplanted vegetation and management of the Russian thistle area. The restoration effort shall also be monitored to assess the effectiveness of the restoration, and additional restoration efforts shall be conducted as needed to achieve the objectives of the proposed action over a five-year period. Restoration status reports shall be submitted to the BLM annually.*

***MM-Veg-8: Revegetation of Solar Arrays Following Construction**. As discussed in Section 2.8.3, BLM considered evaluation of an alternative that would limit site preparation techniques to mowing, leaving the original topography and vegetation in place. As discussed in that section, this alternative was determined to be infeasible due to construction requirements and safety considerations. However, those constraints apply only to construction, and not to operations. Therefore, the Applicant shall de-compact and re-vegetate the solar array areas following the completion of construction.*

The area of re-vegetation would include only areas under and between solar panels which are not used for vehicle access for inspection and maintenance of panels. The 20-foot wide pathways between arrays would be exempted, and would continue to be used for vehicle access. Following completion of construction, the Applicant would de-compact the soil. If the

space between arrays is too narrow to allow entry of small equipment (such as a bobcat), de-compaction would be done using hand-tools.

The de-compacted areas would be seeded using a seed mix agreed upon by the BLM. The seed mix would be developed to encourage growth of vegetation with the following properties:

- *Native plants only, which may provide forage or habitat for wildlife, and which are desired to be included in the final re-vegetation following decommissioning;*
- *Build soil nutrients and discourage weeds;*
- *Assist in preventing soil loss;*
- *Would not grow to heights that would interfere with operations;*
- *Provide diversity to avoid accumulation of plant pests and diseases; and*
- *Have shade-tolerance and root system properties that may be amenable to growth under panels.*

Selection of the seed mix may vary depending on the area of the site. Investigation of growth which is successfully occurring under mirrors at Ivanpah SEGS shall be considered when developing the seed mix. Upon agreement by the BLM AO, different seed mixes may be used to establish test plots in order to identify species with the greatest potential for success. The seed source and application method would be the same as described in mitigation measure MM-Veg-5.

De-compaction and re-vegetation of the disc and roll areas would be initiated within one year of construction completion, unless otherwise authorized by the BLM due to limited frequency and duration of rainfall events.

Upon completion of seeding, the areas would be subject to weed control, monitoring, reporting, and re-seeding as specified in mitigation measure MM-Veg-5. Under no circumstance shall a population of invasive or noxious weeds be allowed to develop within the re-vegetation area. Of particular concern are Sahara mustard (Brassica tournefortii) and saltcedar (Tamarix ramosissima), which must not be allowed to produce seeds.

4.17.12 Residual Impacts After Mitigation

Implementation of the avoidance, minimization, and mitigation measures described in Section 4.17.11 would mitigate the *Proposed Action's* direct and indirect impacts to vegetation resources, including *long-term* and temporary impacts to vegetation communities, special status plant species, and state jurisdictional areas. Implementation of the planned avoidance, minimization, and mitigation measures would mitigate impacts to vegetation resources to a level below the CEQA significance threshold. Implementation of the required mitigation would not result in any additional impacts to vegetation resources. *However, given the length of time required to re-vegetate desert environments, it is expected that, even with* the avoidance, minimization, and mitigation measures*, the Project's impacts to vegetation would remain for the long-term following decommissioning.*

4.18 Visual Resources

This section discusses effects on visual resources that would occur with implementation of the Proposed Action and alternatives. The discussion includes cumulative effects, and mitigation measures to avoid or reduce visual effects. Overall, the project would result in the long-term visual alteration of landscapes comprised of BLM-administered lands, other public lands, and private lands.

4.18.1 Methodology for Analysis

The factors considered in determining impacts on visual resources included:

(1) scenic quality of the project site and vicinity;

(2) available visual access and visibility, frequency and duration that the landscape is viewed;

(3) viewing conditions (distance, angle of observation, relative size or scale, spatial relationships, motion, light conditions, seasonable variability and use, atmospheric conditions, and recovery time) and the degree to which project components would dominate the view of the observer;

(4) resulting contrast (form, line, color, and texture) of the proposed facilities or activities with existing landscape characteristics;

(5) the extent to which project features or activities would block views of higher value landscape features; and

(6) the level of public interest in the existing landscape characteristics and concern over potential changes.

The Applicant used computer modeling and rendering techniques to produce simulations of the project site as it would appear with project implementation, as seen from several Key Observation Points (KOPs). BLM and the County used the project simulations and on-site assessment to evaluate the contrast of the project with existing landscape elements. The project contrast with those elements was then rated as none, weak, moderate, or strong.

An *adverse visual impact* typically occurs within public view when: (1) an action perceptibly changes existing features of the physical environment so that they no longer appear to be characteristic of the subject locality or region; (2) an action introduces new features to the physical environment that are perceptibly uncharacteristic of the region and/or locale; or (3) aesthetic features of the landscape become less visible (e.g., partially or totally blocked from view) or are removed. Changes that seem uncharacteristic are those that appear out of place, discordant, or distracting. The degree of the visual impact depends upon how noticeable the adverse change may be. The noticeability of a visual impact is a function of project features, context, and viewing conditions (angle of view, distance, primary viewing directions, and duration of view).

Impacts on visual resources associated with the Proposed Action could result from various activities including: structure construction, establishment of construction staging areas and access roads, and project operation or presence of the built facilities. As stated in Section 3.18, the visual resources technical approach utilizes the BLM's Visual Resource Management (VRM) System methodology (contrast analysis) for BLM administered public lands. This methodology utilizes field analysis, photo-documentation, and visual simulation techniques. The methodology is described in greater detail in Appendix C, and the results of the impact assessment are summarized and presented as a series of foldout tables in Appendix C. Appendix C also presents the VRM Contrast Rating forms for each KOP.

4.18.2 CEQA Significance Criteria

The significance criteria listed below were used to determine if the proposed solar facility would result in impacts to visual resources under CEQA. These are the same significance criteria for aesthetics listed in the CEQA Environmental Checklist, Appendix G of the CEQA Guidelines. The criteria used to assess the significance of visual impacts resulting from a project take into consideration the factors described in Section 4.18.1 above, as well as federal, state, and local policies and guidelines pertaining to visual resources. Appendix G of the CEQA Guidelines identifies four circumstances that can lead to a determination of significant visual impact. These have been adapted as set forth below for the analysis that follows.

- Vis-1: Project construction or the long-term presence of project components would cause a substantial effect on a scenic vista.
- Vis-2: Project construction or the long-term presence of project components would substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within view of a State Scenic Highway.
- Vis-3: Project construction or the long-term presence of project components would substantially degrade the existing visual character or quality of the site and its surrounding landscape. (Substantial degradation results from higher levels of visual contrast, project dominance, and view blockage. Visual contrast relates to spatial characteristics, visual scale, texture, form, line, and color.)
- Vis-4: Project construction or the long-term presence of a project would create a new source of substantial light or glare that would adversely affect day or nighttime views in the area or be hazardous to motorists or pedestrians.

4.18.3 Additional Criteria

In addition to the four CEQA impact significance criteria identified above, three other indicators of the occurrence of an adverse impact include:

- The presence of a project or alternative would result in a long-term (greater than three years) inconsistency with established (or interim) BLM VRM Class objectives (applies only to public lands administered by the BLM).
- Construction of a project or the presence of project components would result in an inconsistency with state or local regulations, plans, and standards applicable to the protection of visual resources.
- The presence of a project would add to a cumulative visual alteration.

4.18.4 Alternative 1: Proposed Action

4.18.4.1 Direct and Indirect Impacts

The analysis of direct and indirect impacts for the action alternatives (i.e., Alternatives 1 through 4) has been organized according to the following project phases: construction, operation and maintenance, and decommissioning. The nature and severity of the impacts are discussed below under each subheading.

Construction

Construction of the proposed Stateline Solar Farm facility would cause temporary visual impacts due to the presence of equipment, materials, and workforce. These impacts would occur throughout the project area. Construction would involve the use of cranes, heavy construction equipment, temporary storage and office facilities, and temporary laydown/staging areas. Construction would include site clearing and grading; erection of the PV arrays, O&M Building, substation, and transmission lines; and site cleanup and restoration. Visible traffic would also increase along I-15, Yates Well Road, and the BLM recreational access roads. Construction and grading activities would generate dust clouds, which can be visually distracting if not controlled properly. Construction activities would be visible from I-15 (the primary travel corridor in the region), the town of Nipton, drivers on Nipton Road, the Primm Valley Golf Course, the Primm Resorts, BLM recreational access roads, Ivanpah Dry Lake, Stateline and Mesquite Wilderness areas, Clark Mountain ACEC) and other portions of the Mojave National Preserve, and the Ivanpah DWMA.

Throughout the construction period, the industrial character of the activities would constitute adverse visual impacts due to removal of vegetation and earth moving activities. However, the vast majority of the area disturbed by construction would eventually be occupied by solar arrays. The visual impact during construction would be temporary, lasting for the construction period of 2 to 4 years. Some areas of disturbed soil surfaces (characterized by high color, line and texture contrasts) would still remain and would be visible from the various viewing vantage points. Revegetation of areas in this desert region are difficult and generally of limited success. Thus, visual recovery from residual land disturbance would likely occur only over a very long period of time and would require successful restoration, as stipulated in mitigation measure MM-VR-1.

Lighting Impacts

Once solar modules have been installed, certain construction activities potentially would take place at night, especially when needed to perform electrical work while the PV modules are not generating electricity. The Applicant would implement their Lighting Management Plan (First Solar 2012l), which establishes the following objectives:

- Install and operate lights and reflectors so that they are not directly visible from beyond the site boundary;
- Minimize the potential for excessive glare;
- Avoid direct lighting that illuminates the night time sky;
- Minimize the illumination of the project site and immediate vicinity; and
- Comply with applicable BLM and local policies and standards.

Even with implementation of the Lighting Management Plan, construction lighting would still be visible in the area, and would be an adverse impact. Mitigation measure MM-VR-2 would be required to reduce impacts associated with night lighting.

Operation and Maintenance

An analysis of operation and maintenance impacts of the proposed Stateline Solar Farm was conducted for the view areas represented by the KOPs selected for in-depth visual analysis (KOPs 3, 5, 6, 7, 9, 10, and 12; see Figure 3.18-1). The results of the impact analysis are discussed below by KOP and presented in the Visual Analysis Summary Table included as

Appendix C. For each of the selected KOPs, a contrast rating analysis was conducted to determine the level of change that would be caused by project implementation and the facility's consistency with the applicable VRM class management objectives. Contrast Rating Data Sheets are also provided in Appendix C.

In addition to contrast rating, the effect of the project on the factor ratings for scenic quality, sensitivity level, and distance zone, as established in BLM's visual resource inventory (VRI) of the area (BLM 2010), is evaluated. In that inventory, the area was assigned an overall Visual VRI Class III, based on the following factors:

- The Scenic Quality Rating Unit (SQRU) for Primm Valley (SQRU 009) was assigned a Scenic Quality Classification of Class C;
- The Sensitivity Level Rating Unit (SLRU) for Primm Valley (SLRU 09), the Mojave National Preserve Park Boundary (SLRU 48), and Clark Mountain Climbing Area (SLRU 50) each received a Sensitivity Level Rating of H; and
- The Foreground-Middleground distance zone was used for the entire Field Office area.

The factor ratings for scenic quality were provided in Table 3.18-1, and the factor ratings for sensitivity level were provided in Table 3.18.2.

In general, the project would not affect the sensitivity level rating for *the SLRU*. This is because the project would not affect any of the factors (type of use, amount of use, public interest, adjacent land uses, special area sensitivity, or other factors) that are used in assessing sensitivity level. *The expected effect of the project on these factors is as follows:*

- *Type of User: Maintenance of visual quality is expected to remain a major concern for most users.*
- *Amount of Use: Use of the area is expected to remain high, and even increase in the future, even with development of the project.*
- *Public Interest: Maintenance of visual quality was judged to be a moderate public issue in the VRI analysis. The project would not reduce this to a minor public issue.*
- *Adjacent Land Uses: Maintenance of visual quality to sustain adjacent land use objectives was judged to be moderately important in the VRI. The project is not expected to change this conclusion to slightly important.*
- *Other: The project would not affect the cultural issues in the southern part of the SLRU.*

Similarly, the project would not affect the distance zone, which was established as Foreground-Middleground throughout the Needles Field Office area (BLM 2010).

The project would also not affect the factors of landform, water, adjacent scenery, or scarcity, which are some of the factors that are used to establish scenic quality. The project could affect vegetation, color, and cultural modification, which are other factors used to evaluate scenic quality. The analysis includes an evaluation of the effect of the project and alternatives on these four factors. The evaluation of the effect of the project on vegetation, color, and cultural modification is the same for all KOPs, so is summarized as follows, for all KOPs:

- Vegetation. In BLM's VRI, the Primm Valley SQRU received a vegetation factor rating of 2, out of a scale ranging from 1 (least variety) to 5 (most variety). By removing vegetation from a large portion of the viewshed, the Proposed Action would not increase this rating, and could potentially reduce the rating to 1.
- Color. In BLM's VRI, the Primm Valley SQRU received a color factor rating of 3, out of a scale ranging from 1 (subtle variation and muted tones) to 5 (rich combinations or

variety, pleasing contrast in the soil, rock, or vegetation fields). While the Proposed Action would increase color variation, that variation would present an industrial, man-made color against the natural soil, rock, and vegetation fields that would likely not be considered a pleasing contrast. Therefore, the color factor could be reduced from 3 to 2.

- Cultural Modification. In BLM's VRI, the Primm Valley SQRU received a cultural modification factor rating of -1, out of a scale ranging from -4 (modifications are discordant and promote disharmony) to 2 (modifications add favorably to visual variety while promoting visual harmony). The SQRU received a rating of -1 due to the presence of the Primm Valley casinos and golf course. It is likely that the presence of the Proposed Action would further reduce this rating, as it would introduce additional visual elements that would be considered discordant with the surrounding rock, vegetation, and soil fields.

It should be noted that these changes would not result in any change to the Scenic Quality Classification of the SQRU, or to the overall VRI Class. This because the SQRU had already received a Scenic Quality Classification of "C", which is the lowest possible class. Although the evaluation of the vegetation, color, and cultural modification factors above would result in a lower Total Score for Scenic Quality, it would not result in a lower class. Because the Scenic Quality Classification*, Sensitivity Level Rating, and Distance Zone* would not change, the overall VRI Class (of which *these are the components*) would also not change.

The vast majority of the area disturbed by construction would eventually be occupied by solar arrays, so it is unlikely that areas of disturbed soil surfaces (characterized by high color, line and texture contrasts) would still remain and be visible from the various viewing vantage points after construction is completed. Impacts associated with the visual appearance of project infrastructure would be reduced through implementation of mitigation measure MM-VR-3 (treatment of the surfaces of project structures) and mitigation measures MM-VR-4 (project design).

View from KOPs along Interstate 15

Of the KOPs selected for analysis, three (KOPs 3, 5, and 9) represent *locations near Interstate 15 (the highway shoulder and overpasses), and are intended to represent views that would be experienced by viewers in vehicles on the highway.* The subsections below describe the visual appearance of the facility from each of those locations. The following paragraphs describe how the angle of view would change for a viewer traveling along the highway, and duration of views that would be expected.

Viewers traveling southbound on I-15 would not be able to see the facility until they crossed the California-Nevada state line at Primm, at which point they would be within 2 miles of the facility. From *near* KOP-3 near the state line, these viewers would view the facility almost directly in front of them, and slightly to the right, as they leave Primm and travel across Ivanpah Dry Lake. However, within less than 4 minutes (4 miles south at approximately 70 mph), the facility would be behind the viewers, and the view would be blocked by the golf course. Once past the golf course *near* KOP-5, the facility would continue to be visible, but would be directly behind the viewers. The facility would remain behind the viewers for another 6 minutes (6 additional miles south at 70 mph), and would then disappear as the viewers passed KOP-9 *(at the Nipton Road exit)* and entered Wheaton Wash. Overall, the facility would be visible to these viewers for approximately 10 minutes, of which the facility would be at a convenient viewing angle (in front or slightly to the side) for only 2 or 3 minutes. For the remainder of the time, the facility would be behind the viewers and receding, and would therefore not interfere with their view of the Clark Mountains.

Viewers traveling northbound on I-15 would not be able to see the facility until they passed the Nipton Road exit (KOP-9) when they exited Wheaton Wash. Upon passing the Nipton Road exit, the facility would be visible almost directly in front of the viewers, and slightly to the left, at a distance of approximately 10 miles. The facility would remain at this angle of view for approximately 8 minutes, and would grow in size as the viewers came closer. The facility would be blocked briefly by the golf course near KOP-5, but would again be visible on the viewers' left for another few minutes as the vehicle crossed Ivanpah Dry Lake. For the last 2 minutes, the facility would be behind the viewers, until the vehicle crossed the state line at Primm. Overall, the facility would be visible to these viewers for approximately 10 minutes, of which the facility would be at a convenient viewing angle (in front or slightly to the side) for approximately 8 minutes. For the duration of that time, the facility would be very prominent in the viewscape, and very noticeable to the viewers.

Analysis of Specific KOPs

Table 4.19-1 provides a summary of the evaluation of the view from each KOP with respect to the environmental factors specified in the BLM Visual Resource Manual 8341. The table is followed by a discussion of the contrast that would be visible from each KOP.

Table 4.18-1. Summary of Factor Evaluation of KOPs[1]

Factor	KOP-3	KOP-5	KOP-6	KOP-7	KOP-9	KOP-10	KOP-12
Distance	Relatively close	Relatively close in Alts. 1, 3, and 4, very close in Alt. 2	Relatively close	Relatively close in Alts. 1, 3, and 4, very close in Alt. 2	Relatively far	Relatively far	Relatively close
Angle of View	Flat	Flat	Flat	Flat	Flat	Elevated relative to the flat KOPs	Elevated relative to the flat KOPs
Duration	Short duration view from moving vehicle	Short duration view from moving vehicle	Viewer would be stationary on golf course, but likely short duration view	Viewer would be stationary on golf course, but likely short duration view	Short duration view from moving vehicle	Viewer would be stationary in hiking area, and may be exposed to view for long duration	Viewer would be stationary in hiking area, and may be exposed to view for long duration
Relative Scale	Small compared to surrounding mountains	Small compared to surrounding mountains	Small compared to surrounding mountains	Small compared to surrounding mountains	Small compared to surrounding mountains	Small compared to surrounding mountains	Small compared to surrounding mountains
Season	Same number of viewers year-round	Same number of viewers year-round	Probably more visitors in spring,	Probably more visitors in spring,	Same number of viewers year-round	Probably more visitors in spring,	Probably more visitors in spring,

Table 4.18-1. Summary of Factor Evaluation of KOPs[1]

Factor	KOP-3	KOP-5	KOP-6	KOP-7	KOP-9	KOP-10	KOP-12
			summer, and fall, and fewer in winter	summer, and fall, and fewer in winter		summer, and fall, and fewer in winter	summer, and fall, and fewer in winter
Light Conditions	Temporary during low angle sun conditions	Does not affect views	Does not affect views	Does not affect views	Does not affect views	Does not affect views	Does not affect views
Recovery Time	Long-term impact due to re-vegetation recovery time	Long-term impact due to re-vegetation recovery time	Long-term impact due to re-vegetation recovery time	Long-term impact due to re-vegetation recovery time	Long-term impact due to re-vegetation recovery time	Long-term impact due to re-vegetation recovery time	Long-term impact due to re-vegetation recovery time
Spatial Relationship	Low position against land backdrop	Low position against land backdrop	Low position against land backdrop	Low position against land backdrop	Low position against land backdrop	View in Alt. 2 covers wider field of view than other action alternatives	Low position against land backdrop
Atmospheric Condition	Does not affect views	Does not affect views	Does not affect views	Does not affect views	Does not affect views	Does not affect views	Does not affect views
Motion	Not applicable to area	Not applicable to area	Not applicable to area	Not applicable to area	Not applicable to area	Not applicable to area	Not applicable to area

1 – Evaluation is applicable to all action alternatives except where otherwise noted.

KOP-3 – Interstate 15 south of Primm

Figure 4.18-1A presents the existing view from KOP-3 on northbound I-15 about 2 miles south of Primm. The view is to the west and southwest towards the Clark Mountain Range with Interstate, and shows I-15 in the foreground, and Ivanpah Dry Lake and the alluvial fan in the middle ground. Figure 4.18-1B presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 1. As shown in the simulation, the reflected sunlight (PV panels absorb most sunlight) from the panels as they face the KOP would appear as a lighter, silver-gray color that would have a moderate contrast with adjacent darker soils and vegetation for a maximum of ½ hour in the morning during summer months. The panels would appear as a dark horizontal band located at slightly more than one mile from the KOP that is somewhat indistinct from the surrounding landscape.

The PV panels appear to be approximately the same elevation as the surrounding landscape as seen from KOP 3. This is because of a relatively low profile (5 feet above ground surface), and because the supporting infrastructure is hidden from view by the terrain or 6-foot fencing treated or painted to reduce visual impacts. Supporting infrastructure such as roads and the Gen-Tie line are visible, but small in scale relative to existing landscape features.

The dark color of the PV modules recedes into the landscape, and the rectangular form and horizontal line of the arrays repeat the horizontal planes and lines of the valley landscape. The

contrasts of the panel arrays would be low because of the large scale of the array, which is about 1.4 miles west of the KOP, would be subordinate to the overall scale of the landscape. Alternative 1 would meet the VRM Class III objective to partially retain the existing character of the landscape.

KOP-5 – Interstate 15 south of Primm Valley Golf Club

Figure 4.18-2A presents the existing view from KOP-5 *on the* Yates Well Road *overpass over* I-15 about 0.5 miles south of the Primm Valley Golf Club. The view is to the northwest towards the Stateline Wilderness Area in the Mesquite Range. Figure 4.18-2B presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 1. The solar array would be located about 2.3 miles northwest of KOP 5, and would be mostly hidden by the trees of the golf course. The solar array would be very difficult to discern from the surrounding landscape because form, line and color contrasts would be diffused by the distance. The rectangular form and horizontal lines of the arrays repeat the horizontal planes and lines of the valley landscape. The overall level of change would be low as seen from the KOP primarily because of the muted dark tones and low profile of the panels, and the scale of the facilities would be subordinate to the landscape. Alternative 1 would meet the VRM Class III objective to partially retain the existing character of the landscape.

KOP-6 – Northwest Corner of Primm Valley Golf Club

Figure 4.18-3A presents the existing view from KOP-6 from a high point within the golf course. *This KOP represents a worst-case scenario, as views* towards the proposed project from much of the golf course would be screened by a berm along the course perimeter. The view is to the northwest and north, and includes the golf course greens and landscaping, and winding paved path, sparse golf course structures. Beyond the golf course, the lattice towers of a transmission line extend from the foreground to the background; the town of Primm is visible in the background to the north. The rugged Clark Mountain Range provides a backdrop to KOP views. The Ivanpah SEGS is currently under construction to the west and southwest of the KOP; the visual simulations depict the completed Ivanpah project. Figure 4.18-3B presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 1. The reflected sunlight (PV panels absorb most sunlight) from the panels as they face the KOP would appear as a light, silvery-gray color that would have a moderate contrast with adjacent darker soils and vegetation for an estimated ½ hour during morning hours. The panels would appear as a dark horizontal band located at slightly more than 0.8 mile north of the KOP, and would have low color contrasts with the surrounding landscape. The low color contrasts reduce and mute the straight edge line and large-scale, geometric form contrasts.

The PV panels appear to be approximately the same elevation as the surrounding landscape as seen from KOP-6. This is because of a relatively low profile (5 feet above ground surface), and because the supporting infrastructure is hidden from view by the terrain or 6-foot fencing treated or painted to reduce visual impacts. Supporting infrastructure such as roads and the Gen-Tie line either are not visible, or appear to very similar adjacent existing structures.

The dark color of the PV modules recedes into the landscape, and the form and horizontal line of the arrays repeat the horizontal planes and lines of the valley landscape; however, the contrasts of the panel arrays would be moderate because of the large scale of the array, which is about 0.8 miles from the KOP and extends across a broad horizontal extent of the field of view. Alternative 1 would meet the VRM Class III objective to partially retain the existing character of the landscape.

KOP-7 – Southwest Corner of Primm Valley Golf Club

Figure 4.18-4A presents the existing view from KOP-7 from the southwest corner of Primm Golf Course. The view is to the west, and includes the golf course ditch at the course perimeter, a fence, and the gently rising alluvial fan to the west of the course. The Ivanpah SEGS is currently under construction to the northwest, west and southwest of the KOP; the visual simulations depict the completed Ivanpah project. Figure 4.18-4B presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 1. The solar array is not visible in southwest views from the KOP, as shown in the simulation for Alternative 1, KOP-7; however, in views to the north to northwest, the solar array would appear as a horizontal band extending across a 1.5 mile distance located at slightly more than 1.5 mile north of the KOP. The facility would be visible, but the dark color of the PV modules recedes into the landscape, and the rectangular form and horizontal line of the arrays repeat the horizontal planes and lines of the valley landscape. The contrasts of the panel arrays would also be low because of the large scale of the north array would be subordinate to the overall scale of the landscape. Alternative 1 would meet the VRM Class III objective to partially retain the existing character of the landscape.

KOP-9 – Nipton Road Overpass

Figure 4.18-5A presents the existing view from KOP-9. KOP-9 provides a view to the north-northwest from the Nipton Road overpass at I-15 nearly 10 miles south of Primm, Nevada (the KOP is in California). The highway and Nipton Road on the overpass are in the immediate foreground. The Clark Mountain Range provides a rugged backdrop to the foreground to background views of the flat Ivanpah Valley. The Ivanpah SEGS is currently under construction to the west and southwest of the KOP; the visual simulations depict the completed Ivanpah project. Figure 4.18-5B presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 1. The KOP is about 6.7 miles south of the solar array. The panels would not face KOP-9. The panels would appear as a distant, dark and muted horizontal band that is somewhat indistinct from the surrounding landscape.

The form, line and color contrasts of the panel arrays would be low; primarily because the distance of more than 6 miles diffuses contrasts into the surrounding landscape, and the scale of the facility is small relative to surrounding landforms. The overall level of change would be low as seen from the KOP. Alternative 1 would meet the VRM Class III objective to partially retain the existing character of the landscape.

KOP-10 – Clark Mountain Range near Benson Mine

Figure 4.18-6A presents the existing view from KOP-10 from the Mojave National Preserve near Clark Mountain. KOP-10 provides a view to the east and northeast from Colosseum Road in the Mojave National Preserve. The KOP overlooks part of Ivanpah Valley and Ivanpah Dry Lake. Hills at the base of the Clark Mountain Range frame the view of the valley. The Lucy Gray Mountains are in background views. The Ivanpah SEGS is currently under construction to the west and southwest of the KOP; the visual simulations depict the completed Ivanpah project. Figure 4.18-6B presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 1. The KOP is about 5 miles west-southwest of the solar array. The reflected sunlight (PV panels absorb most sunlight) from the panels as they face the KOP would appear as a silvery-gray color with a moderate contrast with adjacent darker soils and vegetation for a very brief interval of time in the late afternoon. The panels would appear as a dark horizontal band that is somewhat indistinct from the surrounding landscape.

The form, line and color contrasts of the panel arrays would be low; primarily because the distance of 5 miles diffuses contrasts into the surrounding landscape, and the scale of the facility is small relative to surrounding landforms. The overall level of change for all facilities would be low as seen from the KOP. Alternative 1 would meet the VRM Class III objective to partially retain the existing character of the landscape.

KOP-12 – Stateline Wilderness Area

Figure 4.18-7A presents the existing view from KOP-12 from the Stateline Wilderness Area north of the project site. KOP-12 is on a transmission line access road 2.8 miles west of Primm. The view is to the south, and includes a broad expanse of the Ivanpah Valley with a mountainous backdrop to the southeast, south, and southwest. The rugged Clark Mountain Range provides a backdrop to KOP views. The Ivanpah SEGS is currently under construction to the west and southwest of the KOP; the visual simulations depict the completed Ivanpah project. Figure 4.18-7B presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 1. The solar array would be within 0.40 miles of KOP-12. The panels would not face KOP-12. The panels would appear as a horizontal band extending across a wide field of view within in close proximity to the KOP. The supporting infrastructure and the shielded night-lighting would be visible due to the close proximity of the array. The overall level of change would be moderate, because the large scale of the array to the viewpoint would be lessened by the muted dark colors, which recede into the landscape; the low profile of the arrays appear to be almost flush with the ground surface; and because the dominant horizontal lines and form of the facility repeats the horizontal lines of the valley as seen from the KOP. The facility would be noticeable, but would not dominate the view. Alternative 1 would meet the VRM Class III objective to partially retain the existing character of the landscape. The impacts to viewers at the KOP are larger under Alternative 1 than under Alternative 2, because the facility is closer to the viewer, and would appear larger in scale.

Glint and Glare Impacts

An issue of public concern regarding the installation of solar arrays, including PV modules, is adverse visual impacts and the potential for air traffic hazards from glint and glare effects. Glint (specular reflection) is produced from the reflection of the sun on a reflective surface. Glint is a potential source of viewer distraction from the strong contrasts and intense reflected light from reflective surfaces. Glare is a reflection of the bright sky that is less intense than glint, and is a continuous source of brightness during daylight hours.

PV panels are designed to absorb solar energy to produce electricity. The PV panels used for the Stateline project are black and absorb over 90 percent of received solar energy (First Solar 2011). The glass used in PV panels has a much lower reflectance level than standard glass and other common reflective surfaces (SunPower 2009). There is very little potential for glint and glare from the proposed PV modules because of the dark color and low reflectivity of the PV panels.

A glint and glare analysis prepared for a similar PV project, located at a slightly more northerly latitude than the Stateline project, used 3-D modeling to calculate the potential for glint and glare effects to KOPs (Power Engineers 2010). The study assumed a worst case scenario of high PV panel reflectivity, which would not occur under the proposed Stateline project because the project would use PV panels with a very low reflectivity. The PV arrays in the 3-D model were oriented to follow the sun throughout the day. The glint and glare analysis concluded that due to the low angle of the sun in the sky during winter months, glint and glare would only occur during the summer months for KOPs looking east and northeast to the solar array during

morning hours, and KOPs looking west and northwest to the solar array during evening hours. KOPs north of the solar array looking in a southern direction experienced no glint or glare during any season. Glint effects lasted approximately ½ hour for all KOPs.

The orientation of the proposed project PV panels with respect to the viewing locations is similar to the solar array assessed in the Power Engineers glint and glare analysis. Glint effects, if any, would affect proposed project KOPs 3, 5, 6, and 7 for an estimated ½ hour in the morning during summer months; and KOP 10 for an estimated ½ hour in the evening during the summer months. There would be no potential glint effect to KOP 12 or KOP 9, because the panels would not face towards these locations. Glint and glare effects from the proposed project would be non-existent to very minor. There would be no noticeable effect to the visual quality of the landscape, and no hazard to viewers from glint and glare effects.

The closest public airport that serves the valley is in Las Vegas, nearly 24 miles northeast of the project. The planned Southern Nevada Supplemental Airport (analysis of the airport is currently suspended) may be constructed north of Primm, approximately 3 miles northeast of the proposed project (FAA 2012). The SunPower Solar Module Glare and Reflectance Technical Note T09014 (SunPower 2009) notes that existing PV solar array projects installed near airports or on air force bases have passed Federal Aviation Administration (FAA) or Air Force standards, and been determined as “no hazard to air navigation”. The possible glint and glare from PV panels are at safe levels, and usually considerably lower than other common reflective surfaces. There would be no hazard to existing or planned airport operations from glint and glare effects of the proposed facility.

Lighting Impacts

Like construction, operation and maintenance of the proposed facility would be performed in accordance with the Applicant’s Lighting Management Plan (First Solar 2012l). Under this plan, no lighting would be placed on the facility perimeter fence surrounding the 2,143 acre facility. Lighting would only be placed at the O&M Building, substation, entrance gate, and security guard booth, all of which are located in a limited area near the facility entrance. The lighting would be shielded and directed downward, and would be controlled by manual switch or by motion sensor adjusted to human height.

Although impacts would be reduced through implementation of this plan, facility lighting would still be visible at night from all KOPs. Mitigation measure MM-VR-2 would be required to reduce impacts associated with night lighting.

Decommissioning

After the end of the project’s useful life, decommissioning would involve removal of all built project structures and site restoration in accordance with the approved Decommissioning Plan (First Solar 2012d). The decommissioning of the project would be similar to the construction activities described earlier, and would include demolition and removal of above-ground and subsurface facilities and site contouring and restoration. However, the duration of decommissioning would be shorter than the duration of construction. Complete removal of the facility would leave an adverse visual impact over the entire site due to the strong color contrast created between graded, disturbed soil areas and undisturbed soil areas in the vicinity of the project site. Revegetation in this desert region is difficult and generally of limited success. Thus, visual recovery from land disturbance of closure and decommissioning would likely occur only over a very long period of time. To ensure site revegetation and restoration as rapidly as possible, mitigation measure MM-VR-1 is recommended to achieve site restoration to the extent feasible.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the existing Ivanpah DWMA would not have an adverse impact on visual resources in the area. The establishment of the Ivanpah DWMA in the NEMO plan amendments (BLM 2002) specified that additional cumulative surface disturbance within the DWMA is limited to 1 percent of the total area of the DWMA. This restriction would place substantial limits on future development that could take place on the additional *23,363* acres that would be added to the DWMA under the Proposed Action, thus making it unlikely that development projects that would create adverse visual impacts would be implemented in the future. As a result, the current visual character of the area would remain in its current condition. Therefore, the modification of the DWMA boundary would constitute a beneficial impact to visual resources.

4.18.4.2 CEQA Significance Determinations

This analysis considered the potential impacts of the proposed project in relation to the four significance criteria for visual resource impacts listed in Appendix G of the CEQA Guidelines, under Aesthetics, and the three additional criteria presented in Section 4.18.2 above.

Vis-1

Construction

Although no designated scenic vistas exist in the study area, viewpoints in the Clark Mountains within the Mojave National Preserve and the Stateline Wilderness Area may be considered scenic vistas due both to their very high scenic quality and high levels of recreational use. As shown in Figure 4.18-6B for KOP-10 in the Clark Mountains, and Figure 4.18-7B for KOP-12 in the Stateline Wilderness Area, the proposed Stateline facility would be visible from elevated vantage points in the area. However, although vegetation removal on an area of 2,143 acres would occur during construction, the construction area would not be prominently visible in the views from either KOP-10 or KOP-12. Construction would not involve any structures that are elevated more than approximately 12 feet above the ground surface. From KOP-10, the construction site would be located approximately 5 miles away. Although the site would be located much closer to KOP-12 (within less than 1 mile), the site view from that location would be dominated by transmission towers in the foreground, and the low-lying construction site would not be prominently visible.

View corridors to Clark Mountain from I-15 could also be considered to be a scenic vista in light of the County scenic designation of I-15 within Ivanpah Valley. Although the construction area of proposed facility would be visible from I-15 (see Figures 4.18-1B and 4.18-2B), it would not substantially obstruct these scenic views because of the low height of any construction equipment.

Overall, the impact of construction on scenic vistas would be less than significant. In addition, the impact associated with construction would be temporary. All disturbed areas would eventually either be covered by PV arrays, or would be restored as required by mitigation measure MM-VR-1.

Operation and Maintenance

As with construction, the completed, operational facility would be visible from elevated vantage points in the area (KOP-10 and KOP-12), and from I-15 (KOP-3 and KOP-5). However, similar to construction, the view of the operational facility from the KOPs that provide scenic vistas

would not be prominent for several reasons. The completed solar arrays would not have any structures greater than approximately 12 feet in height, and the configuration of the solar arrays in low lying; horizontal rows would appear as a dark horizontal band that is somewhat indistinct from the surrounding landscape. Also, the views of the facility would be much less prominent than those of the adjacent Ivanpah SEGS facility, Primm Valley Golf Course, and transmission towers, each of which includes elements that have a greater height above the ground surface than would the Stateline facility.

Overall, the impact of the proposed facility on scenic vistas would be less than significant. In addition, the visibility of the facility would also be reduced through the treatment of the surfaces of structures (required in mitigation measure MM-VR-3) and design elements intended to reduce the visual contrast to the landscape (required in mitigation measures MM-VR-4).

Decommissioning

The visual impacts of the proposed facility on scenic vistas during decommissioning would be similar to those described for construction. Visibility of project structures would be reduced as decommissioning proceeded as transmission lines and solar arrays are removed from the site. The removal of the existing facility would leave an adverse visual appearance over the entire site due to the strong color contrast created between graded, disturbed soil areas and undisturbed soil areas in the vicinity of the project site. However, this appearance would not be prominently visible from KOP-3, KOP-5, KOP-10, or KOP-12 because it would include no structures elevated above the surrounding vegetation, it would appear in only in middle and distant ground views, and it would be partially shielded by other manmade facilities (Ivanpah SEGS, the Primm Valley Golf Course, and transmission lines). Therefore, the impact of decommissioning of the proposed facility on scenic vistas would be less than significant. Revegetation of areas in this desert region are difficult and generally of limited success. Thus, visual recovery from land disturbance of closure and decommissioning would likely occur only over a very long period of time. To ensure site revegetation and restoration as rapidly as possible, mitigation measure MM-VR-1 is recommended to achieve site restoration to the extent feasible.

Vis-2

The proposed facility site is located adjacent to I-15, which is not a designated State Scenic Highway. In addition, there are no notable scenic features or historic structures located within the site. Therefore, the project would not substantially damage scenic resources such as trees, rock outcroppings, or historic buildings along a State Scenic Highway and the resulting visual impact would be less than significant under this criterion.

Vis-3

Construction

Although vegetation removal on an area of 2,143 acres would occur during construction, the construction area would not be prominently visible in the views from any of the KOPs. The closest KOP would be located more than 1 mile from the proposed facility, and because construction would not involve any structures that are elevated more than approximately 12 feet above the ground surface, the cleared area would not be prominently visible or block views from any KOP. Also, the views of the cleared area would be much less prominent than those associated with the adjacent Ivanpah SEGS facility, Primm Valley Golf Course, and

transmission towers, each of which includes elements that have a greater height above the ground surface than would the Stateline facility.

Overall, the impact of the proposed facility on the existing visual character of the site and its surrounding landscape, as viewed from any of the KOPs, would be less than significant. In addition, the impact associated with construction would be temporary. All disturbed areas would eventually either be covered by PV arrays, or would be restored as required by mitigation measure MM-VR-1.

Operation and Maintenance

As discussed in Section 4.18.3.1 of this analysis, the proposed Stateline facility would introduce structures with industrial character into the foreground to background views from I-15 (KOP-3, KOP-5, and KOP-9), the Primm Valley Golf Course (KOP-6 and KOP-7), the Mojave National Preserve (KOP-10), and the Stateline Wilderness Area (KOP-12). For the KOPs from which the facility would be visible in the middle ground or background (KOPs-3, 5, 9, 10, and 12), the dark color of the PV modules would recede into the landscape, and the rectangular form and horizontal line of the arrays would repeat the horizontal planes and lines of the valley landscape. Although KOP-6 and KOP-7 are located much closer to the proposed facility, the facility would still not be prominent in views from these locations. The completed solar arrays would not have any structures greater than approximately 12 feet in height, so would not block views from any KOPs. The configuration of the solar arrays in low lying, horizontal rows would appear as a dark horizontal band that is somewhat indistinct from the surrounding landscape, so they would not create substantial levels of visual contrast. Also, the views of the facility would be much less prominent than those associated with the adjacent Ivanpah SEGS facility, Primm Valley Golf Course, and transmission towers, each of which includes elements that have a greater height above the ground surface than would the Stateline facility.

Overall, the impact of the proposed facility on the existing visual character of the site and its surrounding landscape, as viewed from any of the KOPs, would be less than significant. In addition, the visibility of the facility would also be reduced through the treatment of the surfaces of structures (required in mitigation measure MM-VR-3) and design elements intended to reduce the visual contrast to the landscape (required in mitigation measures MM-VR-4).

Decommissioning

The visual impacts of the proposed facility during decommissioning would be similar to those described for construction. Visibility of project structures would be reduced as decommissioning proceeded as transmission lines and solar arrays are removed from the site. The removal of the existing facility would leave an adverse visual appearance over the entire site due to the strong color contrast created between graded, disturbed soil areas and undisturbed soil areas in the vicinity of the project site.; However, this appearance would not be prominently visible from any KOPs because it would include no structures elevated above the surrounding vegetation, it would appear in only in middle and distant ground views, and it would be partially shielded by other manmade facilities (Ivanpah SEGS, the Primm Valley Golf Course, and transmission lines). Therefore, the impact of decommissioning of the proposed facility on the existing visual character of the site and its surrounding landscape, as viewed from any of the KOPs, would be less than significant. Revegetation of areas in this desert region are difficult and generally of limited success. Thus, visual recovery from land disturbance of closure and decommissioning would likely occur only over a very long period of time. To ensure site revegetation and restoration as rapidly as possible, mitigation measure MM-VR-1 is recommended to achieve site restoration to the extent feasible.

Vis-4

The proposed facility would not create a new source of substantial light that would adversely affect nighttime views in the area. Lighting would be used on occasion during construction, and lighting would be installed on the operational facility in accordance with the Applicant's Lighting Management Plan (First Solar 2012l). Although lighting would be visible from all KOPs at night, it would be located in a limited area near the facility entrance, and would be only one of numerous sources of lighting in the area. Therefore, impacts would be less than significant. Mitigation measure MM-VR-2 would further assist in maintaining night lighting impacts to less than significant levels.

4.18.4.3 Additional Criteria Determinations

Would the presence of the project or alternative result in a long-term (greater than three years) inconsistency with established (or interim) BLM VRM class objectives?

No. As discussed in Section 4.18.3.1 of this analysis, the proposed facility would be visible, and would introduce structures with industrial character into the foreground to background views from I-15 (KOP-3, KOP-5, and KOP-9), the Primm Valley Golf Course (KOP-6 and KOP-7), the Mojave National Preserve (KOP-10), and the Stateline Wilderness Area (KOP-12). The configuration of the solar arrays in low lying, horizontal rows would appear as a dark horizontal band that is somewhat indistinct from the surrounding landscape, so they would not create substantial levels of visual contrast. Also, the views of the facility would be much less prominent than those associated with the adjacent Ivanpah SEGS facility, Primm Valley Golf Course, and transmission towers, each of which includes elements that have a greater height above the ground surface than would the Stateline facility. Therefore, Alternative 1 would meet the VRM Class III objective to partially retain the existing character of the landscape.

Would the construction or presence of the project and any of its components result in an inconsistency with local regulations, plans, and standards applicable to the protection of visual resources?

Yes. As discussed in Section 3.18.2, the proposed facility would not be consistent with Goal OS-5 of the Open Space Element of the San Bernardino County General Plan. The proposed project would be visible from I-15, which is designated as a scenic route by the County. The project would not be perceived as maintaining or enhancing the visual character of the area as seen from I-15. However, the San Bernardino County General Plan is not applicable to projects located entirely on public lands.

Would the presence of the proposed facility add to a cumulative visual alteration?

Yes. *The analysis and conclusions regarding visual effects are discussed in Section 4.18.10 below.*

4.18.5 Alternative 2: 2,385 Ac Alternative

4.18.5.1 Direct and Indirect Impacts

The direct and indirect impacts of Alternative 2 would be greater than those described for Alternative 1 (Proposed Action). The Solar Farm site, gen-tie corridor, and access corridor under Alternative 2 would require approximately 2,385 acres of land managed by the BLM, which is 242 acres (or about 12 percent) more than the Proposed Action. Alternative 2 would

also include implementation of a portion of the solar farm in a separate area to the south of the Primm Valley Golf Course. The southern parcel of solar arrays under Alternative 2 would be much closer to several of the KOPs than Alternative 1, resulting in greater visibility to the viewer from those locations. The differences in distance from these KOPs is as follows:

- KOP-5. Under Alternative 1, the closest solar arrays would be located 2.2 miles from viewers on I-15 at this KOP location. Under Alternative 2, the closest arrays would be located approximately 0.5 miles from viewers on I-15.
- KOP-7. Under Alternative 1, the closest solar array would be located approximately 0.5 miles from this KOP. Under Alternative 2, the array located 0.5 miles away would still be in that location. However, as additional array would be located a few hundred feet away, directly across the road from the golf course.
- KOP-10. From KOP-10, the solar array in Alternative 1 would be located in the background views. Under Alternative 2, the arrays would still be in the background views, but there would be two separate arrays visible instead of one.

Construction

The types of construction impacts resulting from Alternative 2 would be essentially the same as for Alternative 1. These would include the contrast created by the removal of vegetation, the appearance of construction equipment, and the presence of lighting. As discussed above, the construction would occur in a location that would be more visible, and therefore create more of an adverse impact, from three of the KOP locations. The visual impact during construction would be temporary, lasting for the construction period of 2 to 4 years.

Operation and Maintenance

An analysis of operation and maintenance impacts of the proposed Stateline Solar Farm was conducted for the view areas represented by the KOPs selected for in-depth visual analysis (KOPs 3, 5, 6, 7, 8, 10, and 12; see Figure 3.18-1). The results of the impact analysis are discussed below by KOP and presented in the Visual Analysis Summary Table included as Appendix C. For each of the selected KOPs, a contrast rating analysis was conducted to determine the level of change that would be caused by project implementation and the facility's consistency with the applicable VRM class management objectives. Contrast Rating Data Sheets are also provided in Appendix C. The vast majority of the area disturbed by construction would eventually be occupied by solar arrays, so it is unlikely that areas of disturbed soil surfaces (characterized by high color, line and texture contrasts) would still remain and be visible from the various viewing vantage points after construction is completed. Impacts associated with the visual appearance of project infrastructure would be reduced through implementation of mitigation measure MM-VR-3 (treatment of the surfaces of project structures) and mitigation measures MM-VR-4 (project design).

KOP-3 – Interstate 15 south of Primm

Figure 4.18-1A presents the existing view from KOP-3 on northbound I-15 about 2 miles south of Primm. The view is to the west and southwest towards the Clark Mountain Range with Interstate, and shows I-15 in the foreground, and Ivanpah Dry Lake and the alluvial fan in the middle ground. Figure 4.18-1C presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 2. The impacts and the degree of contrast under Alternative 2 would appear very similar to Alternative 1, with the exception that the horizontal

extent of the panels is longer than Alternative 1, and interrupted by a break between two separated arrays.

KOP-5 – Interstate 15 south of Primm Valley Golf Club

Figure 4.18-2A presents the existing view from KOP-5 at the Yates Well Road exit on Interstate 15 about 0.5 miles south of the Primm Valley Golf Club. The view is to the northwest towards the Stateline Wilderness Area in the Mesquite Range. Figure 4.18-2C presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 2. This simulation shows two arrays. The north array would appear very similar to Alternative 1, being located approximately 2.2 miles north of the KOP. The south array is in close proximity to the KOP, within 0.5 miles. The reflected sunlight (PV panels absorb most sunlight) from the south array panels as they face the KOP would appear as a silvery-gray color that would have a moderate contrast with adjacent darker soils and vegetation for a maximum of ½ hour in the morning during summer months. The panels would appear as a dark horizontal band located at slightly more than 0.5 mile from the KOP that is somewhat indistinct from the surrounding landscape.

The dark color of the PV modules recedes into the landscape, and the form and horizontal line of the arrays repeat the horizontal planes and lines of the valley landscape; however, the contrasts of the panel arrays would be moderate because of the large scale of the south array, which is in close proximity to the KOP and extends across a broad horizontal extent of the field of view. Supporting infrastructure such as roads and the Gen-Tie line are visible, but small in scale relative to existing landscape features.

The overall level of change would be moderate as seen from the KOP primarily because of the large scale of the south array as seen from KOP 5. Alternative 2 would meet the VRM Class III objective to partially retain the existing character of the landscape.

KOP-6 – Northwest Corner of Primm Valley Golf Club

Figure 4.18-3A presents the existing view from KOP-6 from a high point within the golf course. Views towards the proposed project from much of the golf course would be screened by a berm along the course perimeter. The view is to the northwest and north, and includes the golf course greens and landscaping, and winding paved path, sparse golf course structures. Beyond the golf course, the lattice towers of a transmission line extend from the foreground to the background; the town of Primm is visible in the background to the north. The rugged Clark Mountain Range provides a backdrop to KOP views. The Ivanpah SEGS is currently under construction to the west and southwest of the KOP; the visual simulations depict the completed Ivanpah project.

Figure 4.18-3C presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 2. The northern portion of the Alternative 2 array would be very similar in appearance as seen from KOP-6 as described for Alternative 1; the smaller footprint would not change the appearance because of the view angle. The south array would be about 0.73 miles southwest of the KOP. The additive effect of the south array would increase the visibility of Alternative 2 to a substantially greater degree than Alternative 1. Alternative 2 would not meet the VRM Class III objective to partially retain the existing character of the landscape as seen from KOP-6. Alternative 2 would have the largest impact of the four alternatives, because the north and south arrays would be visible from the KOP.

KOP-7 – Southwest Corner of Primm Valley Golf Club

Figure 4.18-4A presents the existing view from KOP-7 from the southwest corner of Primm Golf Course. The view is to the west, and includes the golf course ditch at the course perimeter, a fence, and the gently rising alluvial fan to the west of the course. The Ivanpah SEGS is currently under construction to the northwest, west and southwest of the KOP; the visual simulations depict the completed Ivanpah project. Figure 4.18-4C presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 2. The southern portion of Alternative 2 would be within 0.10 miles of KOP-7.

The reflected sunlight (PV panels absorb most sunlight) from the panels as they face the KOP would appear as a light, silvery-gray color that would contrast with adjacent darker soils and vegetation for a very brief period in the morning. The supporting infrastructure (tall, narrow, straight edge distribution line poles, and the shielded night-lighting) would be visible due to the close proximity of the array. The facility would dominate the view, and the overall level of change would be high because of the large scale and close proximity of the array to the KOP. Alternative 2 would not meet the VRM Class III objective to partially retain the existing character of the landscape as seen from KOP-7. The impacts to viewers at the golf course are substantially larger under Alternative 2 than under Alternatives 1, 3, or 4.

KOP-9 – Nipton Road Overpass

Figure 4.18-5A presents the existing view from KOP-9. KOP-9 provides a view to the north-northwest from the Nipton Road overpass at I-15 nearly 10 miles south of Primm, Nevada (the KOP is in California). The highway and Nipton Road on the overpass are in the immediate foreground. The Clark Mountain Range provides a rugged backdrop to the foreground to background views of the flat Ivanpah Valley. The Ivanpah SEGS is currently under construction to the west and southwest of the KOP; the visual simulations depict the completed Ivanpah project.

Figure 4.18-5C presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 2. The impacts from the north array are identical to the impacts described for Alternative 1. The south array is about 4 miles north of KOP-9. The impacts and the degree of contrast from the south array would be very similar to the north array. There would be a slightly greater level of contrast under Alternative 2 than from Alternative 1 primarily because both arrays are visible, increasing the overall scale of the project. The panels would appear distant, dark and muted horizontal bands that are somewhat indistinct from the surrounding landscape. Alternative 2 would meet the VRM Class III objective to partially retain the existing character of the landscape.

KOP-10 – Clark Mountain Range near Benson Mine

Figure 4.18-6A presents the existing view from KOP-10 from the Mojave National Preserve near Clark Mountain. KOP-10 provides a view to the east and northeast from Colosseum Road in the Mojave National Preserve. The KOP overlooks part of Ivanpah Valley and Ivanpah Dry Lake. Hills at the base of the Clark Mountain Range frame the view of the valley. The Lucy Gray Mountains are in background views. The Ivanpah SEGS is currently under construction to the west and southwest of the KOP; the visual simulations depict the completed Ivanpah project.

Figure 4.18-6C presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 2. The impacts from the north array are identical to the impacts described for Alternative 1. The south array is about 4.8 miles east of KOP-10. The impacts and the

degree of contrast from the south array would be very similar to the north array. There would be a slightly great level of contrast under Alternative 2 than from Alternative 1 primarily because both arrays increase the overall scale of the project. The panels would appear distant, dark and muted horizontal bands that are somewhat indistinct from the surrounding landscape. Alternative 2 would meet the VRM Class III objective to partially retain the existing character of the landscape.

KOP-12 – Stateline Wilderness Area

Figure 4.18-7A presents the existing view from KOP-12 from the Stateline Wilderness Area north of the project site. KOP-12 is on a transmission line access road 2.8 miles west of Primm. The view is to the south, and includes a broad expanse of the Ivanpah Valley with a mountainous backdrop to the southeast, south, and southwest. The rugged Clark Mountain Range provides a backdrop to KOP views. The Ivanpah SEGS is currently under construction to the west and southwest of the KOP; the visual simulations depict the completed Ivanpah project.

Figure 4.18-7C presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 2. The north solar array would be nearly 1 mile south of KOP-12; the south array would be screened by the north array. The impacts and contrasts would be very similar to Alternative 1; however, the overall degree of impact would be less because the facility and associated contrasts are reduced in scale relative to the landscape. Alternative 2 would meet the VRM Class III objective to partially retain the existing character of the landscape.

Decommissioning

After the end of the project's useful life, decommissioning would involve removal of all built project structures and site restoration in accordance with the approved Decommissioning Plan (First Solar 2012d). Complete removal of the facility would leave an adverse visual impact over the entire site due to the strong color contrast created between graded, disturbed soil areas and undisturbed soil areas in the vicinity of the project site. Revegetation in this desert region is difficult and generally of limited success. Thus, visual recovery from land disturbance of closure and decommissioning would likely occur only over a very long period of time. To ensure site revegetation and restoration as rapidly as possible, mitigation measure MM-VR-1 is recommended to achieve site restoration to the extent feasible.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be approximately the same under Alternative 2 as Alternative 1. The establishment of the Ivanpah DWMA in the NEMO plan amendments (BLM 2002) specified that additional cumulative surface disturbance within the DWMA is limited to 1 percent of the total area of the DWMA. This restriction would place substantial limits on future development that could take place on the additional *23,121* acres that would be added to the DWMA under Alternative 2, thus making it unlikely that development projects that would create adverse visual impacts would be implemented in the future. As a result, the current visual character of the area would remain in its current condition. Therefore, the modification of the DWMA boundary would constitute a beneficial impact to visual resources.

4.18.5.2 CEQA Significance Determinations

The impact significance determinations for Alternative 2 would be the same as for Alternative 1.

4.18.5.3 Additional Criteria Determinations

Would the presence of the project or alternative result in a long-term (greater than three years) inconsistency with established (or interim) BLM VRM class objectives?

Yes. The additive effect of the south array in Alternative 2 would increase the visibility of the facility from KOP-6 and KOP-7 to a substantially greater degree than Alternative 1. Alternative 2 would not meet the VRM Class III objective to partially retain the existing character of the landscape as seen from KOP-6 *or 7*.

The other additional determinations made for Alternative 1 would also apply to Alternative 2.

4.18.6 *Revised* Alternative 3: *1,685* Ac Alternative

4.18.6.1 Direct and Indirect Impacts

The direct and indirect impacts of *Revised* Alternative 3 would essentially be the same as for Alternative 1 (Proposed Action). In general, the acreage of the two alternatives is approximately the same, and their location with respect to the KOP locations is approximately the same. Therefore, the visual appearance and impacts of construction, operations, and decommissioning of *Revised* Alternative 3 would be similar to that described for the Proposed Action.

Construction

Construction impacts resulting from *Revised* Alternative 3 would be essentially the same as for Alternative 1. The reader is referred to Section 4.18.3.1 above for a complete discussion of the visual impacts that would be experienced during project construction.

Operation and Maintenance

Operation and maintenance impacts resulting from *Revised* Alternative 3 would be essentially the same as for Alternative 1. Impacts associated with the visual appearance of project infrastructure would be reduced through implementation of mitigation measure MM-VR-3 (treatment of the surfaces of project structures) and mitigation measures MM-VR-4 (project design). *The visual simulations presented for Alternative 3 in the Draft EIS/EIR are still applicable for Revised Alternative 3, except the visual portion of the facility in Revised Alternative 3 would be slightly smaller than that shown in the simulations.*

KOP-3 – Interstate 15 south of Primm

Figure 4.18-1A presents the existing view from KOP-3 on northbound I-15 about 2 miles south of Primm. The view is to the west and southwest towards the Clark Mountain Range with Interstate, and shows I-15 in the foreground, and Ivanpah Dry Lake and the alluvial fan in the middle ground. Figure 4.18-1D presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 3. The impacts and the degree of contrast under

Alternative 3 would appear very similar to Alternative 1; the horizontal band would appear wider. The degree of contrast is slightly larger in extent; but otherwise very similar.

KOP-5 – Interstate 15 south of Primm Valley Golf Club

Figure 4.18-2A presents the existing view from KOP-5 at the Yates Well Road exit on I-15 about 0.5 miles south of the Primm Valley Golf Club. The view is to the northwest towards the Stateline Wilderness Area in the Mesquite Range. Figure 4.18-2D presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 3. The impacts and the degree of contrast under Alternative 3 would appear identical to Alternative 1.

KOP-6 – Northwest Corner of Primm Valley Golf Club

Figure 4.18-3A presents the existing view from KOP-6 from a high point within the golf course. Views towards the proposed project from much of the golf course would be screened by a berm along the course perimeter. The view is to the northwest and north, and includes the golf course greens and landscaping, and winding paved path, sparse golf course structures. Beyond the golf course, the lattice towers of a transmission line extend from the foreground to the background; the town of Primm is visible in the background to the north. The rugged Clark Mountain Range provides a backdrop to KOP views. The Ivanpah SEGS is currently under construction to the west and southwest of the KOP; the visual simulations depict the completed Ivanpah project. Figure 4.18-3D presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 3. The impacts and the degree of contrast under Alternative 3 would appear identical to Alternative 1.

KOP-7 – Southwest Corner of Primm Valley Golf Club

Figure 4.18-4A presents the existing view from KOP-7 from the southwest corner of Primm Golf Course. The view is to the west, and includes the golf course ditch at the course perimeter, a fence, and the gently rising alluvial fan to the west of the course. The Ivanpah SEGS is currently under construction to the northwest, west and southwest of the KOP; the visual simulations depict the completed Ivanpah project. Figure 4.18-4D presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 3. The impacts and the degree of contrast under Alternative 3 would appear identical to Alternative 1.

KOP-9 – Nipton Road Overpass

Figure 4.18-5A presents the existing view from KOP-9. KOP-9 provides a view to the north-northwest from the Nipton Road overpass at I-15 nearly 10 miles south of Primm, Nevada (the KOP is in California). The highway and Nipton Road on the overpass are in the immediate foreground. The Clark Mountain Range provides a rugged backdrop to the foreground to background views of the flat Ivanpah Valley. The Ivanpah SEGS is currently under construction to the west and southwest of the KOP; the visual simulations depict the completed Ivanpah project. Figure 4.18-5D presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 3. The impacts and the degree of contrast under Alternative 3 would appear identical to Alternative 1.

KOP-10 – Clark Mountain Range near Benson Mine

Figure 4.18-6A presents the existing view from KOP-10 from the Mojave National Preserve near Clark Mountain. KOP-10 provides a view to the east and northeast from Colosseum Road in the Mojave National Preserve. The KOP overlooks part of Ivanpah Valley and Ivanpah Dry Lake. Hills at the base of the Clark Mountain Range frame the view of the valley. The Lucy Gray Mountains are in background views. The Ivanpah SEGS is currently under construction to the west and southwest of the KOP; the visual simulations depict the completed Ivanpah project. Figure 4.18-6D presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 2. The impacts and the degree of contrast under Alternative 3 would appear identical to Alternative 1.

KOP-12 – Stateline Wilderness Area

Figure 4.18-7A presents the existing view from KOP-12 from the Stateline Wilderness Area north of the project site. KOP-12 is on a transmission line access road 2.8 miles west of Primm. The view is to the south, and includes a broad expanse of the Ivanpah Valley with a mountainous backdrop to the southeast, south, and southwest. The rugged Clark Mountain Range provides a backdrop to KOP views. The Ivanpah SEGS is currently under construction to the west and southwest of the KOP; the visual simulations depict the completed Ivanpah project. Figure 4.18-7D presents a visual simulation that depicts the addition of the proposed solar arrays in Alternative 3. The impacts and the degree of contrast under Alternative 3 would appear identical to Alternative 1.

Decommissioning

After the end of the project's useful life, decommissioning would involve removal of all built project structures and site restoration in accordance with the approved Decommissioning Plan (First Solar 2012d). Complete removal of the facility would leave an adverse visual impact over the entire site due to the strong color contrast created between graded, disturbed soil areas and undisturbed soil areas in the vicinity of the project site. Revegetation in this desert region is difficult and generally of limited success. Thus, visual recovery from land disturbance of closure and decommissioning would likely occur only over a very long period of time. To ensure site revegetation and restoration as rapidly as possible, mitigation measure MM-VR-1 is recommended to achieve site restoration to the extent feasible.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be approximately the same under *Revised* Alternative 3 as Alternative 1. The establishment of the Ivanpah DWMA in the NEMO plan amendments (BLM 2002) specified that additional cumulative surface disturbance within the DWMA is limited to 1 percent of the total area of the DWMA. This restriction would place substantial limits on future development that could take place on the additional *23,821* acres that would be added to the DWMA under *Revised* Alternative 3, thus making it unlikely that development projects that would create adverse visual impacts would be implemented in the future. As a result, the current visual character of the area would remain in its current condition. Therefore, the modification of the DWMA boundary would constitute a beneficial impact to visual resources.

4.18.6.2 CEQA Significance Determinations

The impact significance determinations for *Revised* Alternative 3 would be the same as for Alternative 1.

4.18.6.3 Additional Criteria Determinations

The additional determinations made for Alternative 1 would also apply to *Revised* Alternative 3.

4.18.7 Alternative 4: Reduced Acreage Alternative

4.18.7.1 Direct and Indirect Impacts

Alternative 4 is conceptually similar to the Proposed Action (Alternative 1), but would be placed within a different land area which comprises 1,766 acres. The land area associated with Alternative 4 would be the same as the northern portion of the bifurcated footprint of Alternative 2. The direct and indirect impacts of Alternative 4 would be reduced from those associated with the Proposed Action due to the smaller size of the project footprint and reduced number of solar arrays.

Construction

The types of visual impacts resulting from project construction, including the contrast created by the removal of vegetation, the appearance of construction equipment, and the presence of lighting, would be the same of those described for the Proposed Action. However, the magnitude of these impacts would be reduced by the smaller size of the project footprint. In addition, the duration of the impact would be reduced due to the shorter construction time.

Operation and Maintenance

Operation and maintenance impacts resulting from Alternative 4 would be essentially the same as for Alternatives 1 and 3. The visual appearance of the facility under Alternative 4 was not simulated separately from the other action alternatives. However, the appearance of the alternative, and the visual impacts, would be most similar to the visual simulations for Alternative 3. Like the Proposed Action, impacts associated with the visual appearance of project infrastructure would be reduced through implementation of mitigation measure MM-VR-3 (treatment of the surfaces of project structures) and mitigation measures MM-VR-4 (project design).

Decommissioning

After the end of the project's useful life, decommissioning would involve removal of all built project structures and site restoration in accordance with the approved Decommissioning Plan (First Solar 2012d). Complete removal of the facility would leave an adverse visual impact over the entire site due to the strong color contrast created between graded, disturbed soil areas and undisturbed soil areas in the vicinity of the project site. Revegetation in this desert region is difficult and generally of limited success. Thus, visual recovery from land disturbance of closure and decommissioning would likely occur only over a very long period of time. To ensure site revegetation and restoration as rapidly as possible, mitigation measure MM-VR-1 is recommended to achieve site restoration to the extent feasible.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be approximately the same under Alternative 4 as Alternative 1. The establishment of the Ivanpah DWMA in the NEMO plan amendments (BLM 2002) specified that additional cumulative surface disturbance within the DWMA is limited to 1 percent of the total area of the DWMA. This restriction would place substantial limits on future development that could take place on the additional *23,740* acres that would be added to the DWMA under Alternative 4, thus making it unlikely that development projects that would create adverse visual impacts would be implemented in the future. As a result, the current visual character of the area would remain in its current condition. Therefore, the modification of the DWMA boundary would constitute a beneficial impact to visual resources.

4.18.7.2 CEQA Significance Determinations

The impact significance determinations for Alternative 4 would be the same as for Alternative 1. Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

4.18.7.3 Additional Criteria Determinations

The additional determinations made for Alternative 1 would also apply to Alternative 4.

4.18.8 Alternative 5: No Action Alternative

4.18.8.1 Direct and Indirect Impacts

Under this alternative, the BLM would not approve the proposed solar facility and would not amend the CDCA Plan. As a result, no solar energy project would be constructed, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, no new structures or facilities would be constructed or operated on the site and no new ground disturbance would occur. As a result, none of the impacts on visual resources from construction or operation of the project would occur. However, if the Proposed Action is not approved, renewable projects would likely be developed on other sites in San Bernardino County, in other areas of California, or in adjacent states within the Desert Southwest as developers strive to provide renewable power that complies with utility requirements and State and Federal mandates. Construction and operation impacts to visual resources would occur at these other sites, similar to those described for the proposed Stateline Solar Farm facility.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under the No Action Alternative. Land uses associated with the Ivanpah DWMA would continue as they are today, and the beneficial impacts that would result from the modification of the DWMA boundary would not occur. The No Action Alternative would not have any adverse impact on visual resources, but it also would not have any of the beneficial impacts associated with limiting future land uses.

4.18.8.2 CEQA Significance Determinations

There would be no impacts to visual resources under Alternative 5.

4.18.8.3 Additional Criteria Determinations

Would the presence of the project or alternative result in a long-term (greater than three years) inconsistency with established (or interim) BLM VRM class objectives?

No. The No Action Alternative would not result in any inconsistency with BLM VRM class objectives.

Would the construction or presence of the project and any of its components result in an inconsistency with local regulations, plans, and standards applicable to the protection of visual resources?

No. There would be no construction of a project or components, and therefore no in consistency with local regulations, plans or standards.

Would the presence of the proposed facility add to a cumulative visual alteration?

No. *The analysis and conclusions regarding visual effects are discussed in Section 4.18.10 below.*

4.18.9 Alternative 6: No Project, Exclude Solar Alternative

4.18.9.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. As a result, no solar energy project would be constructed on the site, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because the CDCA Plan would be amended to make the area unavailable for future solar energy development, it is expected that the site would remain in its existing condition unless another use is designated in this amendment. As such, this No Project Alternative would have no adverse impact on visual resources within and adjacent to the site. However, renewable projects would likely be developed on other sites in San Bernardino County, in other areas of California, or in adjacent states within the Desert Southwest as developers strive to provide renewable power that complies with utility requirements and state and Federal mandates. Construction and operation impacts to visual resources could occur at these other sites, similar to those described for the proposed Stateline Solar facility.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be approximately the same under Alternative 6 as Alternative 1. The establishment of the Ivanpah DWMA in the NEMO plan amendments (BLM 2002) specified that additional cumulative surface disturbance within the DWMA is limited to 1 percent of the total area of the DWMA. This restriction would place substantial limits on future development that could take place on the additional 25,506 acres that would be added to the DWMA under Alternative 6, thus making it unlikely that development projects that would create adverse visual impacts would be implemented in the future. As a

result, the current visual character of the area would remain in its current condition. Therefore, the modification of the DWMA boundary would constitute a beneficial impact to visual resources.

4.18.9.2 CEQA Significance Determinations

There would be no impacts to visual resources under Alternative 6.

4.18.9.3 Additional Criteria Determinations

The additional determinations made for Alternative 5 would also apply to Alternative 6.

4.18.10 Alternative 7: No Project, Approve Solar Alternative

4.18.10.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The Stateline Solar Farm Project would not be constructed on the project site and the project site would remain vacant in the near-term. It is possible that another solar energy project could be constructed on the site. If this were to occur, it is likely that construction and operation impacts to visual resources would be similar to the impacts described for Alternative 1.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under this alternative, so the beneficial impact of that action would not occur. Land uses associated with the Ivanpah DWMA would continue as they are today. If a solar or other renewable energy facility is proposed on the site in the future, the impact on visual resources would be considered in a project-specific environmental analysis that would occur at that time.

4.18.10.2 CEQA Significance Determinations

There would be no impacts to visual resources under Alternative 7.

4.18.10.3 Additional Criteria Determinations

The additional determinations made for Alternative 5 would also apply to Alternative 7.

4.18.11 Cumulative Impacts

Under CEQA, a project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. “Cumulatively considerable” means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (California Code Regulation, Title 14, section 15130). This concept is similar to NEPA, which states that cumulative effects can result from individually minor but collectively significant actions taking place over a period of time (40 CFR §1508.7). Cumulative effects could result from the construction, operation and maintenance, and decommissioning phases of a project.

Cumulative impacts to visual resources would occur where project facilities or activities occupy the same field of view as other built facilities or impacted landscapes, and an adverse change in the visible landscape character is perceived. A cumulative impact could also occur if a viewer perceives that the general visual quality or landscape character of a localized or regional area (such as Ivanpah Valley or the I-15 corridor) is diminished by the proliferation of visible similar structures or construction effects, even if the changes are not within the same field of view as existing (or future) structures or facilities. The result is a perceived "industrialization" or "urbanization" of the existing rural or undeveloped landscape character.

There is the potential for substantial future development along the I-15 corridor and in Ivanpah Valley. A list of the existing and reasonably foreseeable cumulative projects is provided in Table 4.1-1.

4.18.11.1 Geographic Extent/Context

Cumulative impacts to visual resources could occur if implementation of the Stateline Solar Farm project would combine with those of other local or regional projects. The Stateline Solar Farm project is potentially associated with two types of cumulative impacts:

- Local cumulative impacts within the immediate project viewshed (local projects within Ivanpah Valley); and
- Regional cumulative impacts beyond the immediate project viewshed, including the existing and reasonably foreseeable future solar and other energy and development projects along the I-15 corridor. These projects, while not located within the same field of view as the proposed Stateline facility, would, in combination with the Stateline project, contribute to a sense of industrialization or urbanization of the existing landscape character as travelers travel along I-15.

4.18.11.2 Existing Cumulative Conditions

The visual characteristics of the project viewshed, including the cumulative impact of existing developments, were described in Section 3.18.1.3. That discussion summarized the Ivanpah Dry Lake surface, vegetated alluvial fans, and rugged mountain slopes as the predominant nature features of the viewshed. In addition, that discussion described the man-made developments in the viewshed, including transportation infrastructure (I-15 and the Union Pacific Railroad), recreational developments (Primm casinos and the Primm Valley Golf Course), and electric power system developments (transmission lines, Ivanpah SEGS facility, Silver State Solar facility, and Walter Higgins Bighorn Generating Station). These developments have contributed to an industrial, commercialized appearance from most viewing points within Ivanpah Valley. In addition, the location of this area within approximately 30 miles of the major metropolitan area of Las Vegas results in a visual corridor along I-15 that becomes increasingly urbanized and less scenically intact as one progresses northward.

The Visual Resources Inventory of the area was conducted by the BLM Needles Field Office in January 2010, which was before construction of the Ivanpah SEGS project began. The Scenic Quality Rating of the Primm Valley SQRU was rated at that time as a "C", the lowest possible score, so the inclusion of Ivanpah SEGS would not have resulted in a lower rating. However, the Sensitivity Level was rated H, the highest possible rating. It is possible that a new analysis following construction of Ivanpah SEGS may reduce this rating to M, which would result in a VRI Class of IV, rather than the current VRI Class III assignment.

4.18.11.3 Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects; various BLM authorized actions/activities, proposed or approved projects within the County's jurisdiction, and other actions/activities that the agencies consider reasonably foreseeable. Table 4.1-2 summarizes the cumulative projects that would have the potential to combine with the Proposed Action and result in cumulative impacts to visual resources. Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA, or will do so prior to approval. Even if environmental review has not been completed for the cumulative projects described in Table 4.1-2, their effects were considered in the cumulative impacts analysis in the *PA and* EIS/EIR.

Note that, although the Ivanpah SEGS solar facility is still under construction, the baseline visual simulations for this analysis included simulation of that facility as a completed facility. This is because much of the visual impact from that facility, including the visual contrast from the removal of 3,471 acres of vegetation and construction of three 459-foot tall towers, already exists. As a result, Ivanpah SEGS is considered to be an existing facility that forms part of the baseline for the analysis of the proposed Stateline facility.

Proposed projects in the vicinity of the proposed facility that would have potentially adverse impacts to visual resources include the the Southern Nevada Supplemental Airport, Desert Xpress high speed passenger rail line, Silver State Phase 2 solar facility, and the Calnev Pipeline Expansion Project.

4.18.11.4 Cumulative Impacts associated with Proposed Action

Construction

It is expected that one or more of the cumulative projects described above may be under construction at the same time as the Proposed Action. In particular, construction of the Ivanpah SEGS facility is expected to continue through 2013, and construction of the Calnev Pipeline Expansion Project and JPOE are expected to occur in 2013. If construction at these locally cumulative project locations were to occur at the same time as, or consecutively before or after, construction of the proposed Stateline facility, construction activities, equipment and night lighting from these sites would combine with similar activities and equipment from the Stateline site. Construction of the proposed Stateline facility and the other cumulative projects in the immediate project vicinity would lead to the continued presence of construction equipment on roads and in the landscape in the local project region for several years, and would cause a substantial cumulative visual impact.

Operations and Maintenance

It is expected that all of the cumulative projects described above would be operational at the same time as the Proposed Action. As a result, there would be long-term adverse visual impacts during operation of those cumulative projects. The Southern Nevada Supplemental Airport would be located at a sufficiently great distance to not be within the same viewshed as the proposed Stateline facility, Ivanpah SEGS, and Primm, and would therefore have limited visual interaction with the Proposed Action project. However, the other projects, including the Stateline Solar Farm, Ivanpah SEGS, and Silver State solar projects; the EITP and other transmission lines; the existing Walter Higgins Bighorn Generating Station; Primm casinos and golf course; and transportation infrastructure (I-15 and the Union Pacific Railroad) would all simultaneously be visible within middle-ground distance to I-15 motorists, and also be

cumulatively dominant from viewpoints in the Clark Mountains and the Stateline Wilderness Area. This cumulative effect would be substantially more adverse than the adverse impacts of the Stateline project alone. Overall, the proposed Stateline project under any alternative contributes a relatively small, incremental impact to the valley landscape when considered cumulatively with the Ivanpah SEGS project and other developments.

For I-15 motorists, the cumulative effect of Ivanpah SEGS, the Primm Valley Golf Course and casinos, the JPOE, the Silver State solar projects, the Walter Higgins Bighorn Generating Station, transmission lines, and the Desert Xpress projects would be substantially adverse, converting the majority of the western highway frontage within the valley to a more urbanized, developed foreground view with potential to intrude into scenic westward highway views of the Clark Mountains. Regarding the Desert Xpress project, although the specific technology that would be utilized is not known, the most common High Speed Rail technologies in current use require continuous above-ground catenary power lines that are highly urban in character, similar to light rail systems, as well as continuous safety fencing and other ancillary project features. These continuous vertical and linear features would intrude into the foreground of views of Clark Mountain as seen from the highway.

These projects, taken together, have resulted, and will continue to result, in a marked transformation of the existing Ivanpah Valley landscape into a more urbanized visual setting, particularly as seen by I-15 motorists in the northern portion of the valley in the vicinity of the Stateline project. In addition, there would be some likelihood of cumulative light pollution impacts due to an accumulation of night-time light sources, including lighting associated with the Stateline facility, lights associated with Ivanpah SEGS aircraft lighting, the JPOE, and other new and existing power plant lighting.

Decommissioning

Cumulative impacts associated with decommissioning of the proposed Stateline facility or an alternative would include the removal and disposal of solar arrays, aboveground electrical tower components, and substation components. Restoration of the site would include returning the area as close as reasonably possible to pre-construction conditions, in accordance with the Applicant's Decommissioning Plan (First Solar 2012d). Complete removal of the facility would leave an adverse visual impact over the entire site due to the strong color contrast created between graded, disturbed soil areas and undisturbed soil areas in the vicinity of the project site. Revegetation in this desert region is difficult and generally of limited success. Thus, visual recovery from land disturbance of closure and decommissioning would likely occur only over a very long period of time. To ensure site revegetation and restoration as rapidly as possible, mitigation measure MM-VR-1 is recommended to achieve site restoration to the extent feasible. However, visual impacts would continue for the long-term. Decommissioning and restoration would not eliminate the proposed facility's contribution to local and regional cumulative impacts on visual resources, and adverse impacts would occur.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the existing Ivanpah DWMA would not have an adverse impact on visual resources in the area, and would therefore not contribute to cumulative impacts to visual resources. In addition, the establishment of the Ivanpah DWMA in the NEMO plan amendments (BLM 2002) specified that additional cumulative surface disturbance within the DWMA is limited to 1 percent of the total area of the DWMA. This restriction would place substantial limits on future development that could take place on the additional *23,363* acres that would be added to the DWMA under the Proposed Action, thus making it unlikely that

development projects that would create adverse visual impacts would be implemented in the future. As a result, the modification of the DWMA boundary would result in limiting future developments that could contribute to adverse impacts to visual resources. Therefore, the action of modifying the DWMA boundary would be beneficial in retaining the current visual character of the area.

4.18.11.5 CEQA Significance Determinations

The proposed Stateline facility's contribution to the visible industrialization of the desert landscape would constitute a significant visual impact when considered in the context of existing cumulative conditions and reasonably foreseeable projects.

Vis-1

Although no designated scenic vistas exist in the study area, viewpoints in the Clark Mountains within the Mojave National Preserve and the Stateline Wilderness Area may be considered scenic vistas due both to their very high scenic quality and high levels of recreational use. In addition, view corridors to Clark Mountain from I-15 could also be considered to be a scenic vista in light of the County scenic designation of I-15 within Ivanpah Valley. The proposed Stateline facility would be visible in the same field of view as many of the other man-made developments in the valley, including Ivanpah SEGS, numerous transmission lines, and the Primm Valley Golf Course. The introduction of industrial character and structural visual contrast would result in substantial adverse effects on these vista views. The resulting cumulative visual impact would be significant and unavoidable. The proposed Stateline facility plus the reasonably foreseeable projects would contribute to the conversion of natural desert landscapes to landscapes with prominent industrial character (complex industrial forms and lines and surface textures and colors not found in natural desert landscapes).

Although the overall cumulative visual impact would be significant and unavoidable, the views of the Stateline facility itself would be much less prominent than those of the adjacent Ivanpah SEGS facility, Primm Valley Golf Course, and transmission towers, each of which includes elements that have a greater height above the ground surface than would the Stateline facility. Therefore, the contribution of the proposed Stateline facility to the overall impact would not be cumulatively considerable. In addition, the visibility of the facility would be reduced through the treatment of the surfaces of structures (required in mitigation measure MM-VR-3) and design elements intended to reduce the visual contrast to the landscape (required in mitigation measures MM-VR-4).

Vis-2

The proposed facility site and other cumulative projects are located adjacent to I-15, which is not a designated State Scenic Highway. In addition, there are no notable scenic features or historic structures located within in the area. Therefore, the combined projects would not substantially damage scenic resources such as trees, rock outcroppings, or historic buildings along a State Scenic Highway. Therefore, the resulting cumulative visual impact would be less than significant.

Vis-3

The proposed Stateline facility would introduce structures with industrial character into the foreground to background views from I-15 (KOP-3, KOP-5, and KOP-9), the Primm Valley Golf

Course (KOP-6 and KOP-7), the Mojave National Preserve (KOP-10), and the Stateline Wilderness Area (KOP-12). These structures would be visible in the same field of view as many of the other man-made developments in the valley, including Ivanpah SEGS, numerous transmission lines, and the Primm Valley Golf Course. The long-term presence of components of each of these projects would substantially degrade the existing visual character of the site and its surrounding landscape. These projects would create higher levels of visual contrast, would be visually dominant, and would block views of portions of the surrounding landscape. Contrast would result from introduction of industrial forms, lines, surface textures, and colors not found in natural desert landscapes, including introduction of vertical forms into a landscape dominated by horizontal lines. The visual contrast would also result from the large scale of the developments, with solar facilities comprising approximately 5,550 acres of the 29,000 acres area of alluvial fan between I-15 and the Clark Mountains. The resulting cumulative visual impact would be significant and unavoidable.

Although the overall cumulative visual impact would be significant and unavoidable, the views of the Stateline facility itself would be much less prominent than those of the adjacent Ivanpah SEGS facility, Primm Valley Golf Course, and transmission towers, each of which includes elements that have a greater height above the ground surface than would the Stateline facility. The completed solar arrays would not have any structures greater than approximately 12 feet in height, so would not block views from any KOPs. The configuration of the solar arrays in low lying, horizontal rows would appear as a dark horizontal band that is somewhat indistinct from the surrounding landscape, so they would not create substantial levels of visual contrast. Therefore, the contribution of the proposed Stateline facility to the overall impact would not be cumulatively considerable. In addition, the visibility of the facility would be reduced through the treatment of the surfaces of structures (required in mitigation measure MM-VR-3) and design elements intended to reduce the visual contrast to the landscape (required in mitigation measures MM-VR-4).

Vis-4

The proposed facility would not create a new source of substantial light that would adversely affect nighttime views in the area. Lighting would be used on occasion during construction, and lighting would be installed on the operational facility in accordance with the Applicant's Lighting Management Plan (First Solar 2012l). Although lighting would be visible from all KOPs at night, it would be located in a limited area near the facility entrance, and would be only one of numerous sources of lighting in the area. Additional light sources that would comprise a *long-term* part of the landscape include vehicle lights on I-15; lights associated with industrial facilities such as Molycorp, Ivanpah SEGS, the JPOE, Walter Higgins Bighorn Generating Station, and the Silver State solar power plants; and lights associated with urban and commercial development (Primm and Las Vegas).

For the Stateline project, mitigation measure MM-VR-2 would be implemented to reduce night lighting impacts to less than significant levels. Several of the other projects, including Ivanpah SEGS and the Silver State solar power plants, would implement similar mitigation measures. However, several of the other developments would not be designed and operated to reduce night lighting impacts. The Primm developments specifically use bright lighting to attract patrons. Also, although the solar power plants would largely be closed at night and would need no lighting, other projects (including Molycorp, the JPOE, and the Walter Higgins Bighorn Generating Station) would operate at night, and therefore require night lighting for operations. Therefore, although the cumulative effect of the projects in the area would be significant and unavoidable, the contribution of the proposed Stateline facility to this impact would not be cumulatively considerable.

4.18.11.6 Additional Criteria Determinations

Would the presence of the project or alternative result in a long-term (greater than three years) inconsistency with established (or interim) BLM Visual Resource Management (VRM) Class objectives?

No. As discussed in Section 4.18.3.1 of this analysis, the proposed facility would be visible, and would introduce structures with industrial character into the foreground to background views from I-15 (KOP-3, KOP-5, and KOP-9), the Primm Valley Golf Course (KOP-6 and KOP-7), the Mojave National Preserve (KOP-10), and the Stateline Wilderness Area (KOP-12). The configuration of the solar arrays in low lying, horizontal rows would appear as a dark horizontal band that is somewhat indistinct from the surrounding landscape, so they would not create substantial levels of visual contrast. Also, the views of the facility would be much less prominent than those associated with the adjacent Ivanpah SEGS facility, Primm Valley Golf Course, and transmission towers, each of which includes elements that have a greater height above the ground surface than would the Stateline facility. Therefore, the Proposed Action and alternatives would meet the VRM Class III objective to partially retain the existing character of the landscape.

Would the construction or presence of the project and any of its components result in an inconsistency with local regulations, plans, and standards applicable to the protection of visual resources?

Yes. The proposed facility, in combination with the other past, current, and reasonably foreseeable future projects would not be consistent with Goal OS-5 of the Open Space Element of the San Bernardino County General Plan. The proposed project and the other cumulative projects would be visible from I-15, which is designated as a scenic route by the County. The projects would not be perceived as maintaining or enhancing the visual character of the area as seen from I-15. However, the San Bernardino County General Plan is not applicable to projects located entirely on public lands.

Would the presence of the proposed facility add to a cumulative visual alteration?

Yes. As discussed in *Section 4.18.11.4*, Stateline, in conjunction with both existing and reasonably foreseeable cumulative projects, would *contribute to a substantial cumulative visual impact.*

4.18.11.7 Alternatives

Alternative 2: 2,385 Ac Alternative

As discussed in Section 4.18.4.1, the direct and indirect impacts of Alternative 2 would be greater than those described for Alternative 1 (Proposed Action). The Solar Farm site, gen-tie corridor, and access corridor under Alternative 2 would require approximately 2,385 acres of land managed by the BLM, which is 242 acres (or about 12 percent) more than the Proposed Action. Alternative 2 would also include implementation of a portion of the solar farm in a separate area to the south of the Primm Valley Golf Course. The southern parcel of solar arrays under Alternative 2 would be much closer to several of the KOPs than Alternative 1, resulting in greater visibility to the viewer from those locations. In addition, Alternative 2 would place solar arrays in two separate locations more than 1 mile apart, thus creating the impression of two separate industrial facilities instead of one, one to the north of the golf course and one to the south. Although each would be of a smaller size than the array in the Proposed

Action, the existence of two separate arrays would give the visual impression of a larger number of industrial facilities in the area, further contributing to the cumulative visual impact created by industrial and commercial development.

Revised Alternative 3: ***1,685*** Ac Alternative

The visual impacts associated with *Revised* Alternative 3 would be similar to those associated with the Proposed Action. Overall, the appearance of the facility from the KOPs would be approximately the same as the Proposed Action. Therefore, the contribution of *Revised* Alternative 3 to adverse cumulative impacts would be the same as the Proposed Action.

Alternative 4: Reduced Acreage Alternative

As discussed in Section 4.18.6, visual impacts of Alternative 4 would be reduced from those associated with the Proposed Action due to the smaller size of the project footprint and reduced number of solar arrays. However, like the Proposed Action, this alternative would contribute to an increasingly industrial and commercial character of the area. Although the project footprint would be smaller, the large scale of the facility under this alternative (1,766 acres) would still be substantially visible to viewers throughout the Ivanpah Valley, and viewers would likely still view the facility as an adverse impact. Therefore, the contribution of this alternative to adverse cumulative visual impacts would likely be the same as that of the Proposed Action.

Alternative 5: No Action Alternative

The No Action Alternative would not have adverse cumulative impacts, and would therefore not contribute to an adverse cumulative impact in the area. However, if the Proposed Action is not approved, renewable projects would likely be developed on other sites in San Bernardino County, in other areas of California, or in adjacent states within the Desert Southwest as developers strive to provide renewable power that complies with utility requirements and State and Federal mandates. Construction and operation impacts to visual resources would occur at these other sites, and would likely contribute to cumulative visual impacts in those areas.

Alternative 6: No Project, Exclude Solar Alternative

Under this alternative, the BLM would not approve the proposed Stateline solar facility and would amend the CDCA Plan to make the proposed site unavailable for future solar energy development. Because the CDCA Plan would be amended to make the area unavailable for future solar energy development, this No Project Alternative would not contribute to adverse cumulative impacts on visual resources in the project area Like the No Action Alternative, renewable projects would likely be developed on other sites in San Bernardino County, in other areas of California, or in adjacent states within the Desert Southwest as developers strive to provide renewable power that complies with utility requirements and State and Federal mandates. Construction and operation impacts to visual resources would occur at these other sites, and would likely contribute to cumulative visual impacts in those areas.

Alternative 7: No Project, Approve Solar Alternative

Under this alternative, the BLM would not approve the proposed Stateline Solar facility, but would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the site. If this were to

occur, it is likely that the contribution to adverse cumulative impacts to visual resources would be similar to the contribution described for Alternative 1.

4.18.12 Mitigation Measures

Impacts to visual resources would be reduced by implementation of the following mitigation measures.

MM-VR-1: The Applicant shall revegetate disturbed soil *in temporarily disturbed areas following completion of contruction*. In order to specifically address visual concerns, the Decommissioning and Restoration plans shall include reclamation of the area of disturbed soils used for laydown, project construction, and siting of the other ancillary operation and support structures. Revegetation shall re-establish the pre-existing colors, textures and form to the landscape and visually integrate into the adjacent edges removing the lines of demarcation.

MM-VR-2: The Applicant shall design and install all *long-term* exterior lighting and all temporary construction lighting such that: (a) lamps and reflectors are not visible from beyond the project site, including any off-site security buffer areas; (b) lighting does not cause reflected glare; (c) illumination of the project and its immediate vicinity is minimized; and (d) the plan complies with local policies and ordinances. The Applicant shall submit to the BLM and San Bernardino County for review and approval a lighting mitigation plan that includes the following:

- Location and direction of light fixtures that take the lighting mitigation requirements into account;
- Lighting design that considers setbacks of project features from the site boundary to aid in satisfying the lighting mitigation requirements;
- Lighting shall incorporate fixture hoods/shielding, with light directed downward or toward the area to be illuminated;
- Light fixtures that are visible from beyond the project boundary shall have cutoff angles that are sufficient to prevent lamps and reflectors from being visible beyond the project boundary, except where necessary for security;
- All lighting shall be of minimum necessary brightness consistent with operational safety and security; and
- Lights in high illumination areas not occupied on a continuous basis (such as maintenance platforms) shall have (in addition to hoods) switches; timer switches, or motion detectors so that the lights operate only when the area is occupied.

MM-VR-3: The Applicant shall treat the surfaces of all Project structures and buildings visible to the public such that a) their colors minimize visual contrast by blending with the characteristic landscape colors; b) their colors and finishes do not create excessive glare; and c) their colors and finishes are consistent with local policies and ordinances. The transmission line conductors shall be non-specula and nonreflective, and the insulators shall be nonreflective and nonrefractive. The Applicant shall comply with BLM requirements regarding appropriate surface treatments for Project elements. BLM's color shadow gray shall be used for all buildings and other structures unless otherwise directed by BLM when under development.

Additional mitigation measures include:

- Color treat the inverter boxes*, office buildings, storage facilities, non-lattice transmission towers, electrical substation equipment and components* shadow gray from the BLM Environmental Color Chart, as has been done on previous PV projects in the area;
- Use dark gray gravels or color treat the gravel surfaces with Permeon or other coloring agent *on* roads *and* exposed perimeter graveled surfaces, *where appropriate*;
- Chain link fence shall be either powder coated, fused vinyl bonded coated dark green or black or acid etched/ washed *to achieve a non-specular treatment*;
- PV panel supports and holding pins shall be powder coated, fused vinyl bonded coated dark green or black or acid etched/ washed to *achieve a non-specular treatment*.
- *Lattice transmission towers and electrical conductors shall be non-specular.*

MM-VR-4: The Applicant shall use proper design fundamentals to reduce the visual contrast to the characteristic landscape. These include proper siting and location; reduction of visibility; repetition of form, line, color, and texture of the landscape; and reduction of unnecessary disturbance. Design strategies to address these fundamentals shall be based on the following factors:

- Earthwork: Select locations and alignments that fit into the landforms to minimize the size of cuts and fills.
- Vegetation Manipulation: Retain as much of the existing vegetation as possible. Use existing vegetation to screen the development from public viewing. Use scalloped, irregular cleared edges to reduce line contrast. Use irregular clearing shapes to reduce form contrast. Feather and thin the edges of cleared areas and retain a representative mix of plant species and sizes.
- Structures: Minimize the number of structures and combine different activities in one structure. Use natural, self-weathering materials and chemical treatments on surfaces to reduce color contrast. Bury all or part of the structure. Use natural appearing forms to complement the characteristic landscape. Screen the structure from view by using natural land forms and vegetation. Reduce the line contrast created by straight edges. Use road aggregate and concrete colors that match the color of the characteristic landscape surface. Co-locate facilities within the same disturbed corridor.

4.18.13 Residual Impacts After Mitigation

Vegetation clearance and presence of infrastructure. It is expected that even with effective implementation of mitigation measures MM-VR-1, MM-VR-3, and MM-VR-4, the residual impacts associated with land scarring and vegetation clearance would remain for several years given the difficulty of successful revegetation in an arid environment. In combination with the continued presence of solar arrays, transmission lines, and other project structures through the lifespan of the project, this would result in an unavoidable, long-term, adverse impact to visual resources.

Night lighting. In conjunction with both existing and reasonably foreseeable cumulative projects, the Proposed Action and alternatives are not expected to create a new source of substantial light that would adversely affect nighttime views in the area. Specifically, motion activated safety and security lighting is to be installed at the substation, interconnection switchyard, and O&M building. Furthermore, the effective implementation of the lighting control steps contained in mitigation measure MM-VR-2 would ensure that night lighting impacts are reduced to the degree feasible.

4.19 Water Resources

4.19.1 Methodology for Analysis

This section describes effects on water resources that would be caused by implementation of the proposed Stateline Solar Farm facility and alternatives. The following discussion addresses potential environmental impacts associated with implementation of the Proposed Action and recommends measures to reduce or avoid adverse impacts anticipated from construction, operation, and decommissioning of the proposed facility and alternatives. A discussion of cumulative impacts related to water resources is also included in this section. Impacts to water resources were identified based on the predicted interaction between construction, operation, and decommissioning and the environmental setting.

4.19.2 CEQA Significance Criteria

The criteria listed below were used to determine the significance of impacts to water resources of the proposed facility pursuant to CEQA. These indicators are the same as the significance criteria for hydrology and water quality listed in the CEQA Environmental Checklist, Appendix G of the CEQA Guidelines.

- WR-1: Violate any water quality standards or waste discharge requirements, create any substantial new sources of polluted runoff, or otherwise degrade surface water or groundwater quality;
- WR-2: Substantially deplete groundwater supplies or interfere with groundwater recharge, such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- WR-3: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on site or off site;
- WR-4: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on site or off site;
- WR-5: Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- WR-6: Otherwise substantially degrade water quality;
- WR-7: Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- WR-8: Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- WR-9: Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; and
- WR-10: Inundation by seiche, tsunami, or mudflow.

For the proposed Stateline Solar Farm facility, the criteria numbered WR-7 and WR-9 were determined to be inapplicable or would result in no impact and, therefore, are not addressed

further in the impact analysis presented in this section. Regarding housing (Significance Criterion WR-7), the proposed facility would not include the construction of any residential units, and would not introduce new housing to the area. Regarding flooding impacts associated with the failure of a levee or dam (Significance Criterion WR-9), there are no levees or dams located within proximity to the proposed site such that flooding hazards from possible failure would occur. In addition, the Stateline site is not located within proximity to a body of water that could result in a seiche or tsunami such that inundation hazards would be introduced; therefore, in addressing potential impacts under Significance Criterion WR-10, only the potential for inundation by mudflow is discussed.

4.19.3 Alternative 1: Proposed Action

4.19.3.1 Direct and Indirect Impacts

This analysis of direct and indirect impacts for the Proposed Action is organized according to the following project phases: construction; operation and maintenance; and decommissioning.

The *Proposed Action* would be required to comply with all applicable water quality standards and waste discharge requirements, as presented in Section 3.19.2 of this *PA and* EIS/EIR. Key standards and requirements relevant to water resources impacts of the Proposed Action include, but are not limited to, those listed below:

- Acquisition of BLM's property owner right to pump and use groundwater through issuance of a ROW grant.
- Well construction permits from San Bernardino County.
- Streambed Alteration Agreement from the California Department of Fish and Wildlife (CDFW).
- Clean Water Act Section 402 National Pollutant Discharge Elimination System (NPDES) General Permit for stormwater discharges associated with construction activities, including a Stormwater Pollution Prevention Plan (SWPPP) with Best Management Practices (BMPs) for stormwater management.
- Clean Water Act Section 401 certification from the Lahontan Regional Water Quality Control Board (RWQCB).

Mitigation measure MM-Water-1 (*Demonstrate Compliance with Water Quality Permits)* requires the Applicant to demonstrate compliance with all applicable permitting requirements prior to commencing construction, which will ensure that the proposed Stateline facility is in compliance with all applicable water quality permits and waste discharge requirements associated with construction, operation, and decommissioning activities. Therefore, potential impacts associated with permit compliance are the same for all three project phases, and are not addressed further in this discussion for Alternative 1.

Construction

Groundwater Supply and Recharge

Approximately 1,900 acre-feet (ac-ft) of water would be needed during the approximately 2 to 4 year construction period, with the majority (approximately 1,045 ac-ft) of the construction water use occurring during the site preparation period of the first year. Water uses include soil compaction, dust control, and sanitary needs. The peak daily water *withdrawal* is estimated to be approximately 1.5 million gallons per day (gpd). The water *in the Proposed Action* would be obtained from two new groundwater production wells; the primary well to be located on the

southeastern corner of the facility, and the secondary well located approximately 4,250 feet west of facility. The production wells would be 12 inches in diameter and 670 feet deep, with a screened interval located at a depth of 430 to 630 feet below ground surface. The estimated pumping capacity for each well would be 1.5 million gpd, but *the combined production rates from the two wells would not exceed* the peak daily water *withdrawal* of 1.5 million gpd (i.e., there would not be a situation in which both wells are produced to exceed 1.5 million gpd). *Peak daily water use may exceed 1.5 mgd, but this would only be supplied by drawing water down from storage ponds.*

Should the water quality or availability from the primary production well be inadequate for the proposed uses, the Applicant would obtain water from the secondary well. Should the water quality or availability from the secondary well be inadequate, the Applicant would treat the groundwater using a mobile, self-contained ion exchange or reverse osmosis unit. The mobile units would be brought to the site by flat-bed truck, would be situated within the Temporary Construction Area, and would be approximately the size of a 40 foot by 8 foot by 8 foot shipping container. The treated water may be used directly, or could be blended with water stored in temporary storage ponds to meet the desired water quality. The units would be operated and maintained by an outside contractor. The units would require replacement of filters approximately once per week, and the reverse osmosis membrane once per quarter. All wastes from the treatment units would be disposed of offsite by the contractor. Disposal would be done in accordance with local, state, and Federal regulations.

In addition to the production wells, three groundwater monitoring wells would be installed to evaluate potential impacts to groundwater availability and quality. *The depths of the monitoring wells would be determined, on a site-specific basis, to ensure adequate monitoring of the elevation of the groundwater table. The monitoring wells would be used to measure water levels and water quality, so that impacts to these characteristics could be evaluated throughout the project.*

Construction of the proposed Stateline facility could affect groundwater supply and recharge if one of the following occurs: (1) the affected groundwater basin is currently characterized by long-term overdraft conditions *and the Project could exacerbate that condition*; (2) construction activities result in long-term overdraft conditions; (3) substantial drawdown occurs at groundwater wells in the area as a result of construction groundwater pumping; or (4) construction activities redirect natural recharge outside of the groundwater basin, such as through the introduction of impervious areas that prevent infiltration. Each of these potential conditions is discussed below.

Basin-Wide Overdraft

Groundwater overdraft occurs when the quantity of water removed from a groundwater basin exceeds the rate of recharge to that basin; this effect may be long-term, where substantial new groundwater demands are introduced, or this effect may be short-term and seasonal, where new groundwater demands are introduced but are temporary, such that the existing balance of groundwater removal and recharge is restored once the new demand ceases. Drawdown occurs when groundwater pumping at one well lowers the aquifer level such that other wells in the vicinity experience an increased depth to groundwater, requiring greater energy to draw the same volume of water from affected wells. Overdraft and drawdown conditions can be temporary and of varying duration, depending upon the intensity and duration of activities which cause such conditions to occur; for example, the introduction of intensive pumping activities at an existing well may cause localized overdraft conditions and/or drawdown effects, and such effects would cease to occur once the intensive pumping is also ceased. Drawdown can also

be exacerbated if developments on the surface substantially reduce infiltration rates, and therefore reduce groundwater recharge rates

In desert regions, estimation of groundwater recharge from precipitation is the controlling factor in estimating the balance of groundwater available for development in a given basin without causing direct impacts. Several studies have been done in Ivanpah Valley to estimate the amount of recharge occurring in the area. The recharge calculations require that assumptions be made regarding the lateral limits of the groundwater basin, average infiltration rates, and average evaporation rates. The Applicant has calculated a recharge value for the basin of 6,200 acre-feet per year (ac-ft/yr) (First Solar 2011), which is the same value estimated by BrightSource for the adjacent Ivanpah SEGS project (BLM 2010a).

Estimates of recharge in the Ivanpah Valley Groundwater Basin by various authors range from 1,275 to 6,538 ac-ft/yr. The earliest estimate by Glancy (1,607 ac-ft/yr; 1968) was made using generalized statewide precipitation maps, and the lateral extent of the basin was underestimated. The estimate by Moore (1,275 ac-ft/yr; 1968) used a general relationship between altitude and precipitation, and can only be considered a rough estimate. A similar relationship was used by Geomega (2000) in calculating a rate of 2,845 ac-ft/yr. An estimate by ENSR (2007) of 2,608 ac-ft/yr used the same lateral extent as Glancy, and therefore similarly underestimated recharge.

An estimate of 5,800 ac-ft/yr made by Donovan and Katzer (2000) was evaluated by BLM in the analysis of water balance in the Ivanpah SEGS EIS (BLM 2010a). BLM reviewed that analysis, and agreed that the altitude/precipitation relationship and watershed estimates appeared to be reasonable. BLM and the California Energy Commission independently calculated the recharge rate for the Ivanpah SEGS EIS using precipitation data from the U.S. Department of Agriculture (USDA) Geospatial Data Gateway, PRISM Group (Oregon State University). Watershed and subwatershed data was obtained from the USDA Geospatial Data Gateway: 12 digit hydrologic unit. This digitized information was imported into the Energy Commission's GIS to calculate standard Maxey-Eakin method estimates of recharge. Because the Maxey-Eakin method applies a recharge efficiency factor for a given category of precipitation (i.e., a precipitation range with an upper and lower limit), the Energy Commission used these upper and lower precipitation limits to develop a range of potential recharge. The Energy Commission estimated this recharge to be between 5,223 to 6,538 ac-ft/yr, and this value was used by BLM to evaluate potential groundwater impacts associated with the Ivanpah SEGS project.

A comparison of the groundwater recharge rate and potential basin pump rates from all wells in Ivanpah Valley is shown in Table 4.19-1. As shown in this table, the total water balance in the basin would still be positive, even under Alternative 1, in the range of 530 to 1,845 ac-ft/yr. Given that the analysis used worst case pump rates, it is likely that the balance is much higher.

Table 4.19-1. Ivanpah Valley Groundwater Basin Balance during Construction

User	Distance from Proposed Action	Pump Rate[1]
Proposed Stateline facility	0 miles	1,045 ac-ft/yr[2]
Primm Casinos (WP-5 and WP-6)	7,900 to 9,600 feet	860 ac-ft/yr[3]
Primm Valley Golf Course (Colosseum 1, Colosseum 2, PVGC-7, PVGC-8, and PVGC-9)	9,100 to 10,850 feet	1,800 ac-ft/yr[4]
Ivanpah SEGS	14,350 feet	100 ac-ft/yr[5]
Molycorp	17 miles	878 ac-ft/yr[6]
Desert	18 miles	50 ac-ft/yr[3]
Nipton	24 miles	30 ac-ft/yr[3]
Silver State Solar	7 miles	200 ac-ft/yr (future construction) and 21 ac-ft/yr (operations)[7]

Table 4.19-1. Ivanpah Valley Groundwater Basin Balance during Construction

Jean and Jean Lake Valley	>10 miles	740 -ft/yr[3]
Industrial Water Use	>10 miles	150 ac-ft/yr[3]
Other Mining	Unknown	400 ac-ft/yr[3]
Community of Goodsprings	>10 miles	120 ac-ft/yr[3]
Domestic Water Use	Various locations	40 ac-ft/yr[3]
Total Extraction	**6,413 ac-ft/yr**	
Recharge From Precipitation	5,223 to 6,538 ac-ft/yr[8]	
Recharge From Returns	1,720 ac-ft/yr[9]	
Total Recharge	6,943 to 8,258 ac-ft/yr	
Water Balance	530 to 1,845 ac-ft/yr	

[1] Includes users in both north and south Ivanpah Valley. Pump rate is maximum permitted pump rate, which would remain the same regardless of the use of the water.
[2] This represents the highest possible annual use assuming a 2 year construction period, and 55% of all construction water used during the first year of construction. This is the most conservative value of those used in the Applicant's analyses (West Yost *2013a*).
[3] Source: West Yost *2013a*
[4] Source: Permitted value from Broadbent 2012
[5] Source: BLM 2010a. It is assumed the phase of construction requiring the greatest water use for Ivanpah SEGS would be completed by the time Stateline begins construction. Therefore, this rate is the estimated annual operation rate.
[6] Source: San Bernardino County 2010. The wells are currently inactive, but have historically pumped up to 1,200 ac-ft/yr. The 2010 Mitigated Negative Declaration assumes a potential maximum freshwater use rate of 525 gpm, which equates to 847 ac-ft/yr if pumped all year. The largest portion of this would likely be accessed from Molycorp's Shadow Valley wells, so 847 ac-ft/yr from the Ivanpah Well Field is an overestimate. Molycorp's well could also be used as a source of water to support the Calnev pipeline construction, at a maximum amount of 31 ac-ft in less than a year. This water use would likely be concurrent with Proposed Action construction. The total estimate for the Molycorp wells is therefore 847 ac-ft/yr plus 31 ac-ft/yr, or 878 ac0ft/yr.
[7] Source: BLM 2010b (Silver State Solar EIS). Since construction date is unknown, the total extraction calculation assumes construction would be concurrent with Stateline.
[8] Range estimated from BLM 2010a. Applicant's estimate is 6,200 ac-ft/yr (West Yost *2013a*)
[9] Returns occur in infiltration ponds at Primm, at the Bighorn Power Plant, and through infiltration at the Primm Valley Golf Course, but determination of return volumes is difficult. Return volumes used are a conservative estimate as reported in West Yost *2013a*.

Local Drawdown

Although the analysis above shows that the total recharge in Ivanpah Valley is sufficient to support all current and reasonably foreseeable future uses, it also shows that a large amount of the current and future usage occurs within a limited area of the basin to the southwest of Primm. The wells for the two largest water users in the basin (Primm and the Primm Valley Golf Course), as well as the Ivanpah SEGS groundwater well, are all within less than 3 miles of the wells for the Proposed Action. In all, more than 4,000 ac-ft/yr (almost 61 percent) of the total 6,584 ac-ft/yr withdrawn in the basin would be withdrawn from this limited area of the basin. Also note that a large portion of the returns in the basin occurs at Primm, so although withdrawal is focused near the Proposed Action site, the returns are located elsewhere. Therefore, although the basin as a whole can likely support the groundwater withdrawal rates, there is likely to be local groundwater level decline.

Drawdown or a decrease in groundwater levels due to groundwater pumping can result in adverse impacts when the pumping results in lower groundwater levels in nearby wells. These impacts can be both short- and long-term. Interference or drawdown can result in increased pumping lifts and declines in well productivity. Mitigation of these impacts could require costly modifications including the cost of lowering pumps, the cost of deepening a well, and well redevelopment costs. Substantial increases in pumping lift can also cause substantial increases in energy costs.

It should be noted that, even without implementation of the Stateline project, groundwater levels in the nearby production wells are known to fluctuate based on natural precipitation rates, as

well as groundwater withdrawal from the wells. The County has proposed to establish Groundwater Extraction Significance Criteria to *identify a need for further analysis regarding the significance of the effect and whether mitigation is warranted* (Reeder 2007). Although these criteria have not been finalized, they are used as a basis for comparison in Primm's reports to the County (Broadbent 2009; Broadbent 2012), so are referred to in this analysis as tentative significance criteria. For the Primm Valley Golf Course, the Colosseum wells act as primary extraction wells, and the Primm Valley Golf Course (PVGC) wells are used as back-up wells. Water levels and conductance are measured in each well, and reports are filed with the County.

The Annual Report for 2011 (Broadbent 2012) provides the historical data for all wells. The trend in water level in Colosseum wells 1 and 2 show a declining trend since measurements were first reported in 1997. In 1997, the water depth in Colosseum 1 was reported to be in the range of 275 feet deep. Annual measurements since 2000 show declines from a depth of about 286 feet in 2000 to 291 feet in 2011. Measurements in Colosseum 2 show a similar decline from a depth of about 294 feet in 2000 to 298 feet in 2011. The Broadbent (2012) report notes that water levels in all wells are still 11 to 19 feet above the tentative significance criteria. However, the data show that local declines do occur, and appear to be associated with continued production.

The Applicant has conducted modeling of groundwater withdrawal to estimate the impact of *the Proposed Action's* groundwater withdrawal on groundwater levels in nearby wells. The modeling was conducted using a 2-year construction period scenario and a 4-year construction period scenario. Of these, the two year analysis is the more conservative because it concentrates a greater volume of withdrawal into a shorter time period.

The Applicant's analysis included evaluation of the drawdown associated with 100 percent of pumping from the primary well, as well as 100 percent of pumping from the secondary well, and therefore acts as a conservative impact scenario for all other wells in the area. The analysis assumed that 55 percent of the water production (1,045 ac-ft) would occur in the first year of construction, and 45 percent (855 ac-ft) would occur in the second year.

The locations of the wells would be the same under Alternatives 1, *Revised* 3, and 4, so the modeling analysis for the Proposed Action is also applicable to *Revised* Alternative 3 and *Alternative* 4. The well locations would be different under Alternative 2, so a separate model was conducted to evaluate potential drawdown for that scenario. The locations of the wells relative to existing wells is shown in Figure 4.19-1, and the relative distances are provided in Table 4.19-2 below.

Table 4.19-2. Distances Between Groundwater Production Wells (feet)

	Alternatives 1, 3, and 4		**Alternative 2**	
Well	Primary Well	Secondary Well	North Well (Primary)	South Well (Back-up)
WP-5	9,625	5,750	9,625	19,775
WP-6	7,700	5,000	7,700	17,500
Colosseum 1	9,100	13,500	9,100	5,600
Colosseum 2	10,850	15,500	10,850	4,900
Ivanpah SEGS	14,350	14,500	14,350	10,850

The results of the Applicant's analysis indicate that groundwater level declines in the primary well scenario would be: 1.53 feet in WP-5, 1.77 feet in WP-6, 0.55 feet at Ivanpah SEGS, 1.00 feet at Colosseum 1, and 0.63 feet at Colosseum 2. Groundwater level declines in the secondary well scenario would be: 3.18 feet in WP-5, *3.84* feet in WP-6, 0.74 feet at Ivanpah SEGS, 0.57 feet at Colosseum 1, and 0.51 feet at Colosseum 2 (West Yost *2013b*). As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), long-term declines in these wells have already ranged from 4 to 5 feet. However, the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria.

Therefore, the additional decline provided by the Stateline wells would be an adverse impact, but their contribution would be minor compared to that of the other wells.

The Applicant has developed a Groundwater Monitoring and Reporting Plan (West Yost *2013b*) to fulfill the requirements of the San Bernardino County groundwater monitoring program guidelines. Implementation of the plan would be required as part of mitigation measure MM-Water-3. *The Plan is considered by the County to be a draft plan that would be subject to revision once the project is approved by the County.* The plan addresses installation of three monitoring wells, specification of a monitoring network, means to establish baseline groundwater conditions, data to be collected in the program, and means to compare collected data to baseline data. The plan also provides interim significance criteria that the Applicant proposes to use for the first five years, and which would then be updated based on information collected during the first five year period.

The Applicant's Groundwater Monitoring and Reporting Plan proposes a provisional significance criterion to be used to evaluate groundwater level impacts. The proposed criterion is based on a 20 percent increase over the simulated drawdown at *any monitoring point.* The baseline simulation of a drawdown of 0.23 feet *at a distance of 1.5 miles from the primary well* is based on the predicted drawdown following four years of construction and one year of operations. If the monitoring program documents a drawdown that exceeds the criterion, then *mitigation measure MM-Water-3 would require that a more detailed analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted.*

The following mitigation measures would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration*, which in turn would assist in providing freshwater to the aquifer*. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project.

Surface Water and Drainage Patterns

The impact of the Proposed Action on surface water and drainage patterns would be the same under construction, operations and maintenance, and decommissioning. This is because any potential impact would be associated with vegetation removal, site grading, implementation of debris and sediment basins, and existence of infrastructure on the project site. Once vegetation removal, grading, and basin construction is completed during early phases of construction, potential impacts of the facility on stormwater flow would remain the same throughout the remainder of the construction period, and into the operations and decommissioning period. Therefore, this analysis is presented here under construction, but is not repeated for operations and decommissioning of the Proposed Action.

The Proposed Action would be located on an active alluvial fan system characterized by numerous ephemeral drainages that only flow during substantial precipitation events. Most precipitation falling on the fan itself infiltrates, or moves downgradient as sheet flow across the fan. Precipitation occurring in the Clark Mountains upgradient of the project site is conveyed through the alluvial fan wash channels.

Impacts associated with development on an alluvial fan system can include flash flood damage to unprotected site structures, increased soil erosion onsite and in downgradient areas due to increase in stormwater flow rates or concentration of flow, increased potential for flood damage to *adjacent or* downgradient structures *and infrastructure*, and increased sedimentation in downgradient areas. Several features of general project development can affect these potential impacts, as follows:

- Onsite flood damage can be caused by the placement of unprotected structures directly into stormwater flow pathways. For most development projects, this potential is reduced or eliminated by identifying the floodplain and avoiding placement of structures within it. However, on alluvial fans, avoidance is difficult because flow paths migrate randomly due to channel switching. Large-scale features can tend to be more *long-term* and can be avoided; reducing the risk of damage, but any location can be affected, even if there is no appearance of recent flow in the area.
- Soil erosion rates can be increased by causing an increase in stormwater flow velocity. Development projects can increase stormwater flow velocity in three primary ways: constricting the flow pathway, increasing the runoff volume, or decreasing the roughness of the runoff surface. Constriction of flow pathways can occur if facility structures are placed within the pathway. This would not only increase the flood damage risk to that structure, but would increase stormwater velocities downgradient of the structure, leading to increased erosion and flood damage potential in downgradient areas.

  Increases in runoff volume would generally occur if the development created impermeable surfaces such as compacted soil, rooftops, asphalt, or concrete. These surfaces can eliminate the potential for precipitation to infiltrate into the subsurface, thus increasing the volume of water that must leave the site through surface-based runoff.

  Roughness of the runoff surface affects the rate at which surface water can flow on the surface. The primary affect from development projects is the removal of vegetation. The presence of vegetation in an area generally slows surface water flow rates, so removal of vegetation tends to decrease roughness, therefore increasing stormwater flow rates.
- Any increase in erosion in an area must lead, by definition, to an increase in sediment content in a downgradient area. Increased sediment can damage downgradient roads or structures, decrease water quality in downgradient water bodies, or cause adverse changes in vegetation or wildlife habitat. A specific concern of BLM in Ivanpah Valley is the potential for alluvial fan-based developments to increase either erosion or sedimentation rates on Ivanpah Dry Lake, thus affecting the quality of the *lakebed* surface for recreational use such as wind sailing.

Being located on an active alluvial fan, the *Proposed Action* could potentially be affected by, or could cause, any of the impacts described above. The project would include obstruction of existing stormwater flow pathways, removal of vegetation, compaction of soil, and installation of impervious surfaces. If not addressed through project design, regulatory compliance, and mitigation measures, these activities could expose the new facility to flood damage, and could affect structures, wildlife, and recreational land uses in areas downgradient of the facility.

To address these potential impacts, the Applicant has conducted hydrologic modeling to predict stormwater flow conditions, designed the Proposed Action to incorporate protective features, and then included these protective features in additional modeling to verify that they would protect both the facility and the downgradient areas. As discussed in Chapter 2, the Applicant contacted BLM in 2009 to discuss their proposed modeling methodology and assumptions, and to verify that they would be acceptable for BLM's analysis in this *PA and* EIS/EIR.

The design features associated with stormwater management were discussed in Chapter 2, and are summarized again below:

- **Avoidance of Drainage Channels.** The Applicant's initial site investigations determined that two major drainage channels pass through the Project Study Area south of Metamorphic Hill. The presence of Metamorphic Hill in the middle of the alluvial fan results in channeling of stormwater around the feature, primarily to its south. Therefore, the Applicant has proposed their site location to the north and east of Metamorphic Hill, avoiding these two major drainages. This design meets the requirements of mitigation measure MM-Water-7.
- **Debris Basins.** The entire upstream perimeter of the proposed facility would be lined with debris basins. Stormwater entering the facility from upgradient would enter the debris basins, be slowed, and then be released as sheet flow across the PV array area. The basins would be constructed with a 3:1 rip-rap lined slope on the upgradient end, and a 4:1 slope on the downgradient end. The Applicant proposes that the bottom and downgradient surfaces of the basin would consist of compacted soil. However, as required in Mitigation Measures MM-Water-8, the downgradient surface would require armoring to prevent erosion as water is released during storm events.
- **Grading of PV arrays.** To minimize the potential for erosional flow within the array area, the entire site would have its vegetation removed, and would be graded to a flat surface. The grading would promote sheet flow and minimize the potential for erosional channels to develop. Site inspections would be performed to identify any scour or rills that develop, and these would be restored to a flat surface.
- **Sediment Basins.** The downstream perimeter of the proposed facility would be lined with sediment basins. The purpose of the basins would be to slow stormwater flow leaving the site, and to capture any additional sediment generated by the site as a result of vegetation removal.
- **Silt Fence and Fiber Rolls.** Silt fencing and fiber rolls would be used to slow stormwater flow and capture sediment during construction, especially in the period before the debris and sediment basins are completed. During facility construction, the facility would be required, under mitigation measure MM-Water-8 and the Clean Water Act, to develop and implement a Construction SWPPP. The SWPPP would include designation of standard BMPs to be followed, design and construction of stormwater management structures, and use of erosion protection materials such as silt fence and fiber rolls. Although primarily intended for protection of downgradient water quality, the Construction SWPPP would also assist in maintaining stormwater flow pathways and drainage patterns.
- **Internal Road System and Wash Crossings.** Roads within the facility would vary in width and type of construction. The final width and surfacing materials would be determined during final engineering design, in accordance with recommendations of the Final Geotechnical Report. Roads would be constructed from compacted native soil, compacted soil with palliatives, compacted native soil with gravel cover, and/or asphalt, depending on location and planned use. At locations where roads cross washes, cement ford crossings would be installed. The width and thickness of each crossing would be determined on a site-specific basis, depending on the size of the wash*, to ensure adequate flow-through during storm events*.

The Applicant performed hydrologic modeling for the Proposed Action (Taney Engineering 2011a) and for the bifurcated project footprint evaluated in Alternative 2 (Taney Engineering

2011b). Although modeling was not conducted specifically for *Revised* Alternative 3 and *Alternative* 4, the location of these alternatives with respect to stormwater channels is approximately the same as the Proposed Action, and therefore the results of that modeling are judged to be applicable to those alternatives.

The modeling was conducted using the Synthetic Unit Hydrograph Method to determine peak runoff velocities and volumes for the 1.2 year, 10 year, 25 year, and 100 year 24-hour storm events. Input data included the following:

- Precipitation rates for each scenario were estimated using the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 1.
- The drainage subbasins providing stormwater flow into the project area from upgradient areas were developed using USGS topographic maps and commercially available topographic surveys.
- The infiltration rates were estimated using the Soil Conservation Service Curve Number Method, with curve numbers determined using soil types and vegetation cover types specified in the San Bernardino County Hydrology Manual.
- The Antecedent Moisture Condition values were selected based on the San Bernardino County Hydrology Manual.

The modeling effort identified six drainage subbasins totaling more than 23,000 acres providing stormwater flow into the project area. The resulting flow rate calculations are shown in Table 4.19-3.

Table 4.19-3. Comparison of Existing and Post-Development Flow Rates, Proposed Action

Sub-Basin	Existing Flow Rates (cubic feet per second)				Post-Development Flow Rates (cubic feet per second)			
	1.2 yr	10 yr	25 yr	100 yr	1.2 yr	10 yr	25 yr	100 yr
1	550	2,610	3,538	5,674	559	2,625	3,555	5,684
2	424	2,311	3,162	5,215	443	2,344	3,199	5,236
3	547	3,133	4,300	7,215	558	3,160	4,330	7,233
4	280	1,602	2,213	3,742	285	1,615	2,227	3,752
5	326	1,884	2,597	4,381	333	1,897	2,612	4,390
6	419	2,346	3,229	5,420	419	2,346	3,229	5,420
Average Percentage Change in Flow Rate					**+2.02%**	**+0.74%**	**+0.58%**	**+0.21%**

The flow rates presented in Table 4.19-3 show that, on average, the development of the Proposed Action would increase flow rates in the subbasins by a maximum of about 2 percent. In general, the reason that the development would have such a limited effect on flow rates is because stormwater velocities would be deliberately slowed by the use of the debris and sediment basins. Based on these results, the Proposed Action would not be subjected to increased potential for flood damage, and would not modify erosion or sedimentation rates in downstream areas.

Maintaining these results depends on continued operation of the debris and sediment basins as they are designed to operate. Mitigation measure MM-Water-9 would require the Applicant to implement their Storm Water Management Plan (First Solar 2012k), which specifies how the debris and sediment basins would be designed, inspected, and maintained to ensure their continued operation. BLM has reviewed the design of the basins on the Applicant's site plans, the proposed methods for inspection and maintenance in the Storm Water Management Plan, and the methodologies and input parameters for the hydrologic modeling, and concludes that the Proposed Action would not be subjected to increased potential for flood damage, and would not modify erosion or sedimentation rates in downstream areas.

The closest surface water to the site is in the form of springs located at the base of the Clark Mountains. The closest springs are Whiskey Spring (located 4.2 miles from the nearest groundwater withdrawal location, which is the secondary production well), Ivanpah Spring (4.6 miles away), and Willow Spring (4.9 miles away). The springs are located at elevations of more than 4,000 feet above sea level, and are caused by shallow groundwater being forced to the surface by impermeable bedrock. Groundwater for the project, on the other hand, would be supplied from deep alluvial aquifers at an elevation of about 2,400 feet above sea level. Although the source for the alluvial water is ultimately precipitation in the mountains, the large horizontal and vertical distance between the wells and the springs makes any potential impact to the water available for the springs very unlikely.

Stormwater Drainage Systems

Similar to the discussion of surface water and drainage pattern impacts, the impact of the Proposed Action on stormwater drainage systems would be the same under construction, operations and maintenance, and decommissioning. This is because any potential impact would be associated with modification of stormwater flow pathways, volumes, or velocities, and these modifications would occur during initial stages of construction and be maintained throughout the operations and decommissioning periods. Therefore, this analysis is presented here under construction, but is not repeated for operations and decommissioning of the Proposed Action.

No designed stormwater drainage system currently exists in the area of the *Proposed Action* site. Implementation of the Proposed Action would include construction of drainage systems including debris basins, sediment basins, and culverts on the project site itself to protect onsite facilities and ensure that stormwater released downstream of the facility mimics pre-development conditions. The project would not include construction or modification of any stormwater systems either upgradient or downgradient of the facility. Therefore, the proposed facility would not have the potential to create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems and, therefore, no mitigation measures are required to address potential effects to existing or planned stormwater drainage systems.

Flood Hazard Areas

Similar to the discussion of drainage pattern and drainage system impacts, the impact of the Proposed Action associated with flood hazard areas would be the same under construction, operations and maintenance, and decommissioning. This is because any potential impact would be associated with modification of stormwater flow pathways, volumes, or velocities, and these modifications would occur during initial stages of construction and be maintained throughout the operations and decommissioning periods. Therefore, this analysis is presented here under construction, but is not repeated for operations and decommissioning of the Proposed Action.

The Proposed Action would be located in Federal Emergency Management Agency (FEMA) Zone D, which is classified as an area where flood hazards have not been mapped (FEMA 2008). Although a flood hazard analysis has not been conducted by FEMA for this area, the hydrologic study and modeling completed by the Applicant (Taney Engineering 2011a) included calculation of the potential for scour to destabilize structures constructed on the site.

The scour analysis was conducted for the 100 year flood scenario, and included an analysis of the project area without implementation of upstream debris basins, and then with implementation of upstream debris basins. The analysis demonstrated that, without stormwater

management, scour depths of up to 4.1 feet could occur around the support posts of the solar arrays. This depth of scour would not be large enough to destabilize the arrays because of the depth of installation of the supports, and the fact that each array is supported by multiple posts. The scour calculation for the post-development condition, which would include debris basins to slow stormwater and release it as sheet flow across the solar array area, would be approximately 2 feet in depth. Again, this depth would not be high enough to destabilize site structures. The Applicant's Storm Water Management Plan includes provisions to inspect the site following storm events, and any scour of this magnitude would be found and corrected.

The effects described above, including implementation of basins and other stormwater management features, would all occur within the project fenceline. Therefore, the project fence itself would be exposed to stormwater flow. Transport of debris in the stormwater can build up against fences, thus creating dams that can divert stormwater around the area, causing erosion in other locations.

The construction details of the fence must be based on technical performance standards such as maintaining site security and precluding entry of desert tortoises to the project area. These functions require that the fence have openings no greater than 1 inch, and that the bottom of the fence be buried such that there is no space between the bottom of the fence and ground level. With this configuration the fence will, by definition, capture any debris or sediment that is greater than 1-inch in size. Such debris and sediment of this size is ubiquitous throughout the site, and therefore project fencing is certain to capture sediment and inhibit stormwater flow if not monitored and maintained. In order to minimize impacts that could occur from this process, the applicant would implement fence monitoring and response actions designed to address the buildup of such debris, as described in their Storm Water Management Plan (First Solar 2012k). However, such monitoring and repair could only occur after storm events, and adverse impacts could occur during the course of a storm event.

Site structures could also impact nearby infrastructure, including the Primm water supply wells and pipeline, if they modified hydrology to the extent that erosion rates were affected. To address this risk, the Applicant has designed the project fence and detention basins to minimize the potential for erosion. All project components would be located outside of Primmadonna's existing ROW. The detention basins would be located approximately 125 feet downgradient of the Primm wells and access road.

Water Quality

Surface Water

Construction of the proposed facility would include implementation of a Construction SWPPP, in compliance with mitigation measures MM-Water-8 and Section 402 of the CWA (see Section 3.19.2.1 of this *PA and* EIS/EIR), which specifies BMPs to minimize and/or avoid potential impacts associated with stormwater runoff. The SWPPP would incorporate standard BMPs to protect water quality and avoid adverse effects of project construction on surface water quality, including BMPs to prevent drainage pattern alterations to result in adverse effects to surface waters.

There is a potential for construction of the proposed facility to contribute sources of polluted runoff if an accidental leak or release of harmful materials were to occur during construction activities. The Applicant has developed an Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, which includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and

requirements for notices to federal and local emergency response authorities. The hazardous materials to be used are listed in Table 2-1, and include petroleum fuels, transformer oil, hydraulic fluid, and soil stabilizers. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. In particular, fuel storage (for construction vehicles and equipment) would be a temporary activity occurring only for as long as is needed to support construction activities. In addition, the Applicant would site all fueling, hazardous materials storage areas, and operation and maintenance activities involving hazardous materials at least 100 feet away from blue-line drainages as identified on U.S. Geological Survey (USGS) topography maps. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, potential impacts associated with the creation of polluted runoff would be minimized and/or avoided.

Groundwater

Groundwater quality could potentially be impacted by the Proposed Action in two ways: release of contaminants to groundwater, or mobilization of existing poor quality groundwater.

For the first of these, the management of hazardous materials and fuels during construction would be the same as discussed above for surface water. The regulatory requirements, mitigation measures (specifically, MM-PH&S-2 and MM-Water-10), and management plans that would minimize the potential for release of contaminants to surface water would also be effective in minimizing the potential for their release to groundwater. *Moreover, given* the depth to groundwater at the site (approximately 200 feet), it is highly unlikely that any release of fuel or hazardous materials on the surface could reach groundwater. Any releases would likely be very small in volume, and would be identified and remediated before they could migrate the large distance to groundwater. Therefore, contamination of groundwater by the release of contaminants is very unlikely.

The Applicant's proposed use of a temporary septic tank and leach field system for the construction office area could potentially have an adverse impact on soil, surface water, or groundwater quality. Mitigation measure MM-Water-12 would require that the Applicant use portable toilet facilities throughout the project site during construction.

Mobilization of existing poor quality groundwater is a potential concern for the Proposed Action. As discussed in Section 3.19, groundwater quality in the Ivanpah basin decreases with depth, and with proximity to the Dry Lake due to evaporation and concentration of salts. Total Dissolved Solids (TDS) concentrations range from 300 to 500 milligrams per liter (mg/L) in most of the basin, but evaporation at the Dry Lake bed has resulted in TDS concentrations in the center of the Dry Lake as high as 50,000 mg/L. For comparison, EPA has established a National Secondary Drinking Water Regulation for TDS of 500 mg/L.

This variation in groundwater quality in the basin can present a concern when groundwater withdrawal wells are placed near the Dry Lake bed. Groundwater withdrawal creates a cone of depression around each pumping well, resulting in the well drawing in water from depth and from surrounding areas. This effect, very common in coastal areas near salt water bodies, can result in drawing poor quality water into areas previously occupied by high quality water. The effect can be temporary, with fresh water returning to the aquifer when pumping wells are turned off. In other cases the impact can be long-term, if salts from the poor quality water remain in the aquifer.

This effect has been documented in the area of the Proposed Action. Broadbent (2002) reports that TDS concentrations in the PVGC wells increased immediately after the wells were first pumped in 1995. By 1998, the golf course had procured the Colosseum wells to provide better water quality, and had substantially reduced pumping from the PVGC wells. Within two years, the TDS concentrations in PVGC-7 and PVGC-8 had dropped to original levels again, apparently due to recovery of the original groundwater gradient and inflow of fresher water from the recharge areas higher on the alluvial fan.

A similar trend was noted in the Primm wells WP-5 and WP-6. There appears to be a direct positive correlation between pumping rate and TDS concentrations in these wells, with TDS concentrations rising as pump rates increase. This would be consistent with withdrawal of water from depth or from the direction of the Dry Lake. However, TDS concentrations decrease again once pumping is reduced. This trend suggests that detrimental effects to groundwater quality as a result of withdrawal are not permanent (Broadbent 2002). This trend also suggests that the radius of influence of the withdrawal of these wells is of a size to extend deep enough or far enough towards the Dry Lake to capture water from those areas.

The results of the Applicant's Groundwater Monitoring and Reporting Plan (GMP; West Yost 2012b) were used in the Applicant's Water Supply Assessment (LSA 2012). The Water Supply Assessment acknowledged that the Plan had stated that pumping for the solar farm could impact groundwater with respect to increased salinity.

BLM and the County have reviewed the relevant data and reports, and conclude that withdrawal of groundwater as part of the Proposed Action could result in adverse impacts to groundwater quality. Based on the proximity of the proposed project primary well to the Dry Lake, it is likely that original TDS concentration in this well would be a minimum of 500 to 800 mg/L, and probably greater. It is also likely that TDS concentration would increase throughout the duration of the construction period, an effect which could be enhanced due to the concurrent pumping of the Primm wells. This would create two potential impacts: degradation of water quality due to mobilization of saline water; and potential impacts to water, soil, and vegetation resources due to the build-up of sodium, calcium, and other salts that make up the dissolved solids in the groundwater.

For the potential mobilization of saline groundwater, this impact would be adverse during and shortly following construction. Once pumping rates are reduced to minimal levels during operations, groundwater recharge from higher elevations on the alluvial fan would likely reduce, arrest or reverse the lateral movement of saline groundwater and, over time, would likely restore groundwater quality to pre-project levels.

With respect to use of high TDS water for dust control, the water quality that is acceptable for this use would be regulated by the Lahontan Regional Water Quality Control Board (RWQCB), which is responsible for protecting water quality to ensure it remains acceptable for its designated beneficial uses, as described in Tables 3.19-1 and 3.19-2. Based on these designated uses, which include drinking water supply, it is unlikely that the RWQCB would allow the use of water for dust control that would result in a substantial build-up of salts in on-site soils if that could cause degradation of water quality. The final groundwater plans and monitoring reports would be submitted to the RWQCB for review, and the RWQCB could prohibit water use, or require treatment prior to water use. Should the monitoring determine that water quality is unacceptable, the Applicant would obtain water from the secondary well, which is situated in a location that is less likely to be affected by saline intrusion. If use of that well were not possible or did not address the issue, the Applicant would treat the groundwater using a mobile, self-contained ion exchange or reverse osmosis unit.

In general, the use of high TDS water for dust control is not expected to be an issue with respect to damage to vegetation. The dust control would only be used within the solar array

fields, and these areas will have all vegetation removed. As discussed above, the RWQCB is unlikely to allow use of high TDS water to the extent that salts that would affect water quality would build-up in on-site soils. In addition, the on-site soils would be exposed to rainfall, stormwater flow, and modification by sedimentation and erosion during the operational period of the facility. These processes would have the effect of reducing the concentrations of salts that may have built up during construction, making it unlikely that these salts would affect revegetation efforts during decommissioning.

According to the Applicant, water for drinking during construction, operations, and decommissioning phases would be filtered to meet EPA and California drinking water standards, and samples would be collected and submitted to EPA for analysis to verify that it meets the standards. However, if the water from wells exceeds EPA's National Secondary Drinking Water Regulation for TDS of 500 mg/L (which is likely, based on the analysis above), this could not be corrected by filtering. As a result, BLM would require Mitigation Measure MM-Water-11, which would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard. During construction, it is likely that most workers will carry drinking water with them in their vehicles anyway. The volume of additional drinking water needed is expected to be minimal, and would not result in impacts to any resources.

The following mitigation measures would help to ensure that groundwater quality impacts do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse water quality impacts. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration, which in turn would assist in providing freshwater to the aquifer. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project.

Mudflow

Based on the setting of the proposed facility on flat ground near the Dry Lake bed, and several miles from the Clark Mountains, there is no potential for the facility to be impacted by mudflow, or to cause mudflow, during construction, operations, or decommissioning. Because there would be no impacts under any phase of the project, this analysis is presented here under construction, but is not repeated for operations and decommissioning of the Proposed Action.

Operation and Maintenance

Groundwater Supply and Recharge

The only water use associated with operations would be the use of no more than 20 ac-ft/yr of water for sanitary purposes. No water would be used for cleaning solar panels during operations. The water for sanitary purposes would be obtained from the two new groundwater production wells; the primary well to be located on the southeastern corner of the facility, and the secondary well located approximately 4,250 feet west of facility. In addition, three groundwater monitoring wells would be installed to evaluate potential impacts to groundwater availability and quality. The production wells would be 12 inches in diameter and 670 feet deep, with a screened interval located at a depth of 430 to 630 feet below ground surface. *The depths of the monitoring wells would be determined, on a site-specific basis, to ensure adequate monitoring of the elevation of the groundwater table.*

Basin-Wide Overdraft

The situation of the proposed production wells under operations with respect to basin-wide overdraft concerns is the same as evaluated under construction. A comparison of the groundwater recharge rate and potential basin pump rates was shown in Table 4.19-1, and that analysis concluded that the total water balance in the basin during construction would remain positive during construction of Alternative 1, in the range of 530 to 1,845 ac-ft/yr. That analysis included an assumption of an extraction rate of 1,045 ac-ft/yr for the Stateline facility, which is the highest rate that would be anticipated during construction. During operations, that rate would drop to 20 ac-ft/yr. Therefore, the available water balance during operations would be much higher, in the range of 1,586 to 2,901 ac-ft/yr, and there would be no adverse impact.

Local Drawdown

The analysis of the effect of local drawdown presented for construction is also applicable to operations. The modeling conducted by the Applicant included a construction period of 2 years and 4 years, followed by a 30-year operational period. The modeling included a scenario with 100 percent of production from the primary well, as well as a scenario assuming 100 percent of production from the secondary well.

The results of the Applicant's analysis indicate that groundwater level declines in the other nearby wells over the entire construction, operations, and decommissioning periods would be a maximum of 3.18 feet at well WP-5, *3.84* feet at WP-6, 0.74 feet at Ivanpah SEGS, 1.00 feet at Colosseum 1, and 0.63 feet at Colosseum 2 (West Yost *2013b*). As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), long-term declines in these wells have already ranged from 4 to 5 feet. In addition, the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria. In general, the water withdrawal rate of 20 ac-ft/yr during operations is minimal compared to rates of 860 ac-ft/yr for Primm, 1,800 ac-ft/yr for the Primm Valley Golf Course, and 100 ac-ft/yr for Ivanpah SEGS. Therefore, the additional decline provided by the Stateline wells would be a minor impact.

The Applicant's Groundwater Monitoring and Reporting Plan (West Yost *2013b*) would also be applicable to the project operations. The following mitigation measures would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project.

Water Quality

Surface Water

There is a potential for operation of the proposed facility to contribute sources of polluted runoff if an accidental leak or release of harmful materials were to occur during operation and maintenance activities. The Applicant has developed an Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, which includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage

quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and requirements for notices to federal and local emergency response authorities. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. In addition, the Applicant would site all fueling, hazardous materials storage areas, and operation and maintenance activities involving hazardous materials at least 100 feet away from blue-line drainages as identified on USGS topography maps. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, potential impacts associated with the creation of polluted runoff would be minimized and/or avoided.

Groundwater

Groundwater quality could potentially be impacted by the Proposed Action in two ways: release of contaminants to groundwater, or mobilization of existing poor quality groundwater.

For the first of these, the management of hazardous materials and fuels during operations would be the same as discussed above for surface water. The regulatory requirements, mitigation measures (specifically, MM-PH&S-2 and MM-Water-10), and management plans that would minimize the potential for release of contaminants to surface water would also be effective in minimizing the potential for their release to groundwater. An additional requirement during operations would be development and implementation of a Spill Prevention Control and Countermeasures (SPCC) Plan to manage the presence of oil-containing transformers. The SPCC Plan would identify hazardous materials managed onsite during operations, specify the use of appropriate spill containment and cleanup kits to contain accidental hazardous material releases, and specify inspection and response procedures and responsibilities. The Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, would ensure that hazardous materials and wastes would be handled in a safe and environmentally sound manner to prevent releases and in compliance with the requirements set forth in the applicable codes and regulations. Best management practices by the Applicant as presented in the SPCC Plan would ensure that the Applicant minimizes, avoids, or cleans up unforeseen spills of hazardous material. Given the depth to groundwater at the site (approximately 200 feet), it is highly unlikely that any release of fuel or hazardous materials on the surface could reach groundwater. Any releases during operations would likely be very small in volume, and would be identified and remediated before they could migrate the large distance to groundwater. Therefore, contamination of groundwater by the release of contaminants is very unlikely.

Mobilization of existing poor quality groundwater, as discussed for construction, would likely not be a concern during operations due to the low volumes of water that would be produced from the new groundwater wells. Although the wells could be subject to increased salinity during construction, this effect would likely be temporary, and would dissipate when production levels are reduced to no more than 20 ac-ft/yr during operations. As discussed for construction, Mitigation Measure MM-Water-11, would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard.

The Applicant's Groundwater Monitoring and Reporting Plan would also be applicable during project operations. The following mitigation measures would help to ensure that groundwater quality impacts do not occur. Mitigation measure MM-Water-2 would require the Applicant to

develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse water quality impacts. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration, which in turn would assist in providing freshwater to the aquifer. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project.

Decommissioning

The decommissioning of the project would be similar to the construction activities described earlier, and would include demolition and removal of above-ground and subsurface facilities and site contouring and restoration. However, the duration of decommissioning would be shorter than the duration of construction.

Groundwater Supply and Recharge

The Applicant has not defined the amount of water that would be required for dust control during decommissioning of the project. Given that decommissioning would require earth-moving activities across the same total acreage as construction, this evaluation assumes that decommissioning would require, at a maximum, the same volume of water as construction. The impacts of this water use, including water level declines in nearby wells and the potential to mobilize saline groundwater from depth or from the dry lake, would be the same as evaluated for construction of the Proposed Action. In addition, the mitigation measures required for construction would also apply to decommissioning. In practice, it is likely that water use during decommissioning would be much less than construction, because the duration would be shorter. The water would be obtained from the same two groundwater production wells that would supply water for construction and operations.

Basin-Wide Overdraft

The situation of the proposed production wells under decommissioning with respect to basin-wide overdraft concerns is the same as evaluated under construction. A comparison of the groundwater recharge rate and potential basin pump rates was shown in Table 4.19-1, and that analysis concluded that the total water balance in the basin during construction of Alternative 1 would remain positive, in the range of 530 to 1,845 ac-ft/yr. That analysis included an assumption of an extraction rate of 1,045 ac-ft/yr for the Stateline facility, which is the highest rate that would be anticipated during construction. During decommissioning, the rate could rise again to 1,045 ac-ft/yr, but for a much shorter duration than construction. Therefore, the available water balance during decommissioning would be in the range of 1,586 to 2,901 ac-ft/yr, and there would be no adverse impact.

Local Drawdown

The analysis of the effect of local drawdown presented for construction is also applicable to decommissioning. The modeling conducted by the Applicant included a construction period of 2 years and 4 years, followed by a 30-year operational period. The modeling included a scenario with 100 percent of production from the primary well, as well as a scenario assuming 100 percent of production from the secondary well.

The results of the Applicant's analysis indicate that groundwater level declines in the other nearby wells over the entire construction, operations, and decommissioning periods would be a maximum of 3.18 feet at well WP-5, *3.84* feet at WP-6, 0.74 feet at Ivanpah SEGS, 1.00 feet at Colosseum 1, and 0.63 feet at Colosseum 2 (West Yost *2013b*). As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), long-term declines in these wells have already ranged from 4 to 5 feet. In addition, the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria. Also, the drawdown associated with decommissioning would be temporary, and would cease at the end of the decommissioning period. Therefore, the additional decline provided by the Stateline wells would be a minor, temporary impact.

The Applicant's Groundwater Monitoring and Reporting Plan (West Yost *2013b*) would also be applicable to the project decommissioning. The following mitigation measures would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project.

Water Quality

Surface Water

Decommissioning of the Proposed Action would include use of the same types and amounts of fuels and hazardous materials as construction, but for a shorter duration. The Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, would be applicable to project decommissioning. This Plan includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and requirements for notices to federal and local emergency response authorities. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. Once decommissioning is completed, remaining fuel and hazardous materials would be removed from the site, and any waste materials would be disposed offsite in accordance with regulatory requirements. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, potential impacts associated with the creation of polluted runoff would be minimized and/or avoided.

Groundwater

Groundwater quality could potentially be impacted by the Proposed Action in two ways: release of contaminants to groundwater, or mobilization of existing poor quality groundwater.

For the first of these, the management of hazardous materials and fuels during decommissioning would be the same as discussed above for surface water. The regulatory requirements, mitigation measures (specifically, MM-PH&S-2 and MM-Water-10), and management plans that would minimize the potential for release of contaminants to surface water would also be effective in minimizing the potential for their release to groundwater. The Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, would ensure that hazardous materials and wastes would be handled in a safe and environmentally sound manner to prevent releases and in compliance with the requirements set forth in the applicable codes and regulations. Given the depth to groundwater at the site (approximately 200 feet), it is highly unlikely that any release of fuel or hazardous materials on the surface could reach groundwater. Any releases during decommissioning would likely be very small in volume, and would be identified and remediated before they could migrate the large distance to groundwater. Therefore, contamination of groundwater by the release of contaminants is very unlikely.

Mobilization of existing poor quality groundwater, as discussed for construction, *could also occur during decommissioning*. Although the wells could be subject to increased salinity during construction, this effect would likely be temporary, and would dissipate when production levels are reduced to no more than 20 ac-ft/yr during operations. During decommissioning, the rate could rise again to 1,045 ac-ft/yr, but for a much shorter duration than construction. *The effect would then dissipate again after decommissioning, when groundwater production ceases.* As discussed for construction, Mitigation Measure MM-Water-11, would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard.

The Applicant's Groundwater Monitoring and Reporting Plan would also be applicable during project decommissioning. The following mitigation measures would help to ensure that groundwater quality impacts do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse water quality impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration, which in turn would assist in providing freshwater to the aquifer. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project.

Modify Boundary of Ivanpah DWMA

The action of modifying the boundary of the Ivanpah DWMA would not require construction of any structures, use of water resources, or use of hazardous materials that could impact water quality. There would be no impacts to water resources associated with the modified DWMA boundary.

CEQA Significance Determinations

WR-1

Construction

Surface Water

Construction of the proposed facility would include implementation of a Construction SWPPP, in compliance with mitigation measures MM-Water-8 and Section 402 of the CWA (see Section 3.19.2.1 of this *PA and* EIS/EIR), which specifies BMPs to minimize and/or avoid potential impacts associated with stormwater runoff. The Applicant has also developed an Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, which includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and requirements for notices to federal and local emergency response authorities. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. Fuel storage (for construction vehicles and equipment) would be a temporary activity occurring only for as long as is needed to support construction activities. In addition, the Applicant would site all fueling, hazardous materials storage areas, and operation and maintenance activities involving hazardous materials at least 100 feet away from blue-line drainages as identified on USGS topography maps. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, potential impacts associated with the creation of polluted runoff would be minimized and/or avoided. Impacts with respect to WR-1 would be less than significant.

Groundwater

Potential degradation of groundwater quality could occur if the project releases contaminants to groundwater, or caused mobilization of existing poor quality groundwater.

With respect to the release of contaminants, the management of hazardous materials and fuels during construction would be the same as discussed above for surface water. The regulatory requirements, mitigation measures (specifically, MM-PH&S-2 and MM-Water-10), and management plans that would minimize the potential for release of contaminants to surface water would also be effective in minimizing the potential for their release to groundwater. Given the depth to groundwater at the site (approximately 200 feet), it is highly unlikely that any release of fuel or hazardous materials on the surface could reach groundwater. Any releases would likely be very small in volume, and would be identified and remediated before they could migrate the large distance to groundwater. Therefore, contamination of groundwater by the release of contaminants is very unlikely, and impacts would be less than significant.

The Applicant's proposed use of a temporary septic tank and leach field system for the construction office area could potentially impact soil, surface water, or groundwater quality. Mitigation measure MM-Water-12, requiring that the Applicant use portable toilet facilities throughout the project site during construction, would ensure that any impact would remain less than significant.

Mobilization of existing poor quality groundwater is a potential concern for the Proposed Action. As discussed in Section 4.19.3.1, mobilization of high salinity groundwater has been

documented to occur in the local area as a result of groundwater withdrawal from the Primm (WP-5 and WP-6) and Primm Valley Golf Course (PVGC-7, PVGC-8, PVGC-9, Colosseum 1, and Colosseum 2) wells (Broadbent 2002; Broadbent 2009). The location of the proposed primary facility well in close proximity to the Dry Lake, and the withdrawal rate from that well during construction being comparable to the rates of the WP, PVGC, and Colosseum wells, indicates that water production during construction could potentially result in mobilization of saline water from depth or from the Dry Lake. It is likely that this impact would occur if the peak construction production rate were to occur over the long-term, but it is less certain that the effect would occur within the relatively short duration of peak groundwater usage, which would be only one year during construction. If the water quality degraded to the point of being unacceptable, the Applicant would acquire water from the secondary well, which is situated in a location that is less likely to be affected by saline intrusion. If use of that well were not possible or did not address the issue, the Applicant would use on-site groundwater treatment. The impact would be adverse and most significant during and shortly following construction. Once pumping rates are reduced to minimal levels during operations, groundwater recharge from higher elevations on the alluvial fan would likely reduce, arrest or reverse the lateral movement of saline groundwater and, over time, would likely restore groundwater quality to pre-project levels.

In general, the County review of *the Groundwater Monitoring and Reporting Plan (West Yost 2013b)* indicates that it meets County requirements, and would be sufficient to evaluate potential water quality impacts associated with the Proposed Action. However, the Plan does not define a water quality criterion that would be used to identify impacts. Therefore, mitigation measure MM-Water-3 includes a requirement that the Applicant consult with the County and BLM to establish a baseline for the water quality criteria.

The following mitigation measures would help to ensure that groundwater quality impacts do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse water quality impacts. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration, which in turn would assist in providing freshwater to the aquifer. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. As discussed for construction, Mitigation Measure MM-Water-11, would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard. With these measures, and application of the proposed provisional significance criterion based on a 20 percent increase in chloride concentrations as defined in the baseline, the impact would be reduced to less than significant levels.

Operation and Maintenance

Potential risks associated with release of pollutants to surface water or groundwater would be substantially lower during operations than during construction, due to the much smaller volumes of these materials that would be present onsite during operations. With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2, MM-Water-8, and MM-Water-10, potential impacts associated with the creation of polluted runoff would be minimized and/or avoided. Impacts with respect to WR-1 would be less than significant.

Mobilization of existing poor quality groundwater, as discussed for construction, would likely not be a concern during operations due to the low volumes of water that would be produced from the new groundwater wells. Although the wells could be subject to increased salinity during

construction, this effect would likely be temporary, and would dissipate when production levels are reduced to no more than 20 ac-ft/yr during operations. The Applicant's Groundwater Monitoring and Reporting Plan would be implemented during project operations. The following mitigation measures would help to ensure that groundwater quality impacts do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse water quality impacts. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration, which in turn would assist in providing freshwater to the aquifer. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. With implementation of these mitigation measures, impacts would be less than significant.

Decommissioning

Decommissioning of the Proposed Action would include use of the same types and amounts of fuels and hazardous materials as construction, but for a shorter duration. The Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, would be applicable to project decommissioning. With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, potential impacts associated with the creation of polluted runoff would be minimized and/or avoided. Impacts with respect to WR-1 would be less than significant.

Mobilization of existing poor quality groundwater, as discussed for construction, *could also occur during decommissioning.* Although the wells could be subject to increased salinity during construction, this effect would likely be temporary, and would dissipate when production levels are reduced to no more than 20 ac-ft/yr during operations. During decommissioning, the rate could rise again to 1,045 ac-ft/yr, but for a much shorter duration than construction. *The effect would then dissipate again after decommissioning, when groundwater production ceases.* The Applicant's Groundwater Monitoring and Reporting Plan would also be applicable during project decommissioning. The following mitigation measures would help to ensure that groundwater quality impacts do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse water quality impacts. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration, which in turn would assist in providing freshwater to the aquifer. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. As discussed for construction, Mitigation Measure MM-Water-11, would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard. With implementation of these mitigation measures, impacts would be less than significant.

WR-2

Construction

As discussed for direct and indirect impacts for construction, the total water balance in the basin would remain positive, in the range of 530 to 1,845 ac-ft/yr. Therefore, the overall Ivanpah Valley Groundwater Basin (IVGB) is not currently in overdraft, and water withdrawal under the proposed project would not result in placing it into overdraft.

The results of the Applicant's analysis indicate that groundwater level declines in the primary well scenario would be: 1.53 feet in WP-5, 1.77 feet in WP-6, 0.55 feet at Ivanpah SEGS, 1.00 feet at Colosseum 1, and 0.63 feet at Colosseum 2. Groundwater level declines in the secondary well scenario would be: 3.18 feet in WP-5, *3.84* feet in WP-6, 0.74 feet at Ivanpah SEGS, 0.57 feet at Colosseum 1, and 0.51 feet at Colosseum 2 (West Yost *2013b*). As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), long-term declines in these wells have already ranged from 4 to 5 feet. However, the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria. Therefore, the additional decline provided by the Stateline wells would be a minor impact, and would be less than significant.

Application of the provisional significance criterion to be used to evaluate groundwater level impacts in the Applicant's Groundwater Monitoring and Reporting Plan, along with mitigation measures, would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration*, which in turn would assist in providing freshwater to the aquifer*. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. With implementation of these mitigation measures, impacts would be less than significant.

Operation and Maintenance

The only water use associated with operations would be the use of no more than 20 ac-ft/yr of water for sanitary purposes. No water would be used for cleaning solar panels during operations.

The analysis of the effect of local drawdown presented for construction is also applicable to operations. The modeling conducted by the Applicant included a construction period of 2 years and 4 years, followed by a 30-year operational period. The modeling included a scenario with 100 percent of production from the primary well, as well as a scenario assuming 100 percent of production from the secondary well.

The results of the Applicant's analysis indicate that groundwater level declines in the other nearby wells over the entire construction, operations, and decommissioning periods would be a maximum of 3.18 feet at well WP-5, *3.84* feet at WP-6, 0.74 feet at Ivanpah SEGS, 1.00 feet at Colosseum 1, and 0.63 feet at Colosseum 2 (West Yost *2013b*). As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), long-term declines in these wells have already ranged from 4 to 5 feet. In addition, the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria. In general, the water

withdrawal rate of 20 ac-ft/yr during operations is minimal compared to rates of 860 ac-ft/yr for Primm, 1,800 ac-ft/yr for the Primm Valley Golf Course, and 100 ac-ft/yr for Ivanpah SEGS. Therefore, the additional decline provided by the Stateline wells would be a minor impact, and would be less than significant.

The Applicant's Groundwater Monitoring and Reporting Plan (West Yost *2013b*) would also be applicable to the project operations. The following mitigation measures would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. As discussed for construction, Mitigation Measure MM-Water-11, would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard. With implementation of these mitigation measures, impacts would be less than significant.

Decommissioning

The analysis of the effect of local drawdown presented for construction is also applicable to decommissioning. The modeling conducted by the Applicant included a construction period of 2 years and 4 years, followed by a 30-year operational period. The modeling included a scenario with 100 percent of production from the primary well, as well as a scenario assuming 100 percent of production from the secondary well.

The results of the Applicant's analysis indicate that groundwater level declines in the other nearby wells over the entire construction, operations, and decommissioning periods would be a maximum of 3.18 feet at well WP-5, *3.84* feet at WP-6, 0.74 feet at Ivanpah SEGS, 1.00 feet at Colosseum 1, and 0.63 feet at Colosseum 2 (West Yost *2013b*). As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), long-term declines in these wells have already ranged from 4 to 5 feet. In addition, the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria. Also, the drawdown associated with decommissioning would be temporary, and would cease at the end of the decommissioning period. Therefore, the additional decline provided by the Stateline wells would be a minor, temporary impact, and would be less than significant.

The Applicant's Groundwater Monitoring and Reporting Plan (West Yost *2013b*) would also be applicable to the project decommissioning. The following mitigation measures would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. As discussed for construction, Mitigation Measure MM-Water-11, would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard. With implementation of these mitigation measures, impacts would be less than significant.

WR-3

Construction, Operations, and Decommissioning

The proposed Stateline facility would be located on an active alluvial fan system characterized by numerous ephemeral drainages that only flow during substantial precipitation events. By design, the project would deliberately alter the existing drainage within the project area. This design would be implemented in the early stages of construction, and would then remain in place throughout operations and decommissioning. Therefore, impacts would be the same for all three stages of the project.

The facility would be developed by removal of all site vegetation, grading of the project site to a smooth surface, and implementation of upgradient debris basins that would capture channelized stormwater flow and release it across the site as sheet flow. Stormwater leaving the downgradient edge of the site would also be captured in sediment basins, and released to downgradient areas. Construction of these basins would be done as described in Mitigation Measure MM-Water-8. Sediment captured within these basins would be removed on an as needed basis, as directed by the Applicant's Storm Water Management Plan, and would be spread over the areas downgradient of the basins.

The Applicant has used hydrologic modeling, as has been applied on other sites evaluated by BLM and the County, to design the size, locations, and other characteristics of their debris and sediment basins to ensure that stormwater volume and velocity downgradient of the facility matches pre-development conditions. Sediment captured in the onsite system would be spread downgradient of the site, and would thus re-enter the system. Stormwater velocities were modeled to increase by a maximum of about 2 percent, which would not result in modification of sedimentation or erosion. Although stormwater would be released downgradient of the facility as sheet flow, in order to avoid erosion impacts immediately downgradient, it would rapidly re-develop into channels a short distance downgradient, and would therefore not affect the natural drainage.

Maintaining these results depends on continued operation of the debris and sediment basins as they are designed to operate. Mitigation measure MM-Water-9 would require the Applicant to implement their Storm Water Management Plan (First Solar 2012k), which specifies how the debris and sediment basins would be designed, inspected, and maintained to ensure their continued operation. BLM has reviewed the design of the basins on the Applicant's site plans, the proposed methods for inspection and maintenance in the Storm Water Management Plan, and the methodologies and input parameters for the hydrologic modeling, and concludes that the Proposed Action would not be subjected to increased potential for flood damage, and would not modify erosion or sedimentation rates in downstream areas. Impacts would be less than significant.

WR-4

Construction, Operations, and Decommissioning

The analysis and conclusions developed for criterion WR-3 are also applicable to criterion WR-4. While the project would deliberately alter the existing drainage within the project area, the potential for this modification to cause onsite or offsite flooding was evaluated in the Applicant's modeling. Stormwater velocities were modeled to increase by a maximum of about 2 percent, which would not cause flooding onsite, or on any offsite areas.

Mitigation measure MM-Water-9 would require the Applicant to implement their Storm Water Management Plan (First Solar 2012k), which specifies how the debris and sediment basins

would be designed, inspected, and maintained to ensure their continued operation. Impacts would be less than significant.

WR-5

Construction, Operation, and Decommissioning

No designed stormwater drainage system currently exists or is planned in the area of the proposed Stateline facility site. Implementation of the Proposed Action would include construction of drainage systems including debris basins, sediment basins, and culverts on the project site itself to protect onsite facilities and ensure that stormwater released downstream of the facility mimics pre-development conditions. The project would not include construction or modification of any stormwater systems either upgradient or downgradient of the facility. Therefore, the proposed facility would not have the potential to create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems and, therefore, no mitigation measures are required to address potential effects to existing or planned stormwater drainage systems. Impacts would be less than significant.

WR-8

Construction, Operations, and Decommissioning

The Proposed Action would be located in FEMA Zone D, which is classified as an area where flood hazards have not been mapped (FEMA 2008). Although the site has not been designated as being within a 100-year floodplain, stormwater flow is known to occur in channels within the project area on a regular basis. Therefore, structures placed into these channels could potentially be subjected to flood damage, or could redirect flow to other areas. To evaluate the potential for flood damage, the hydrologic study and modeling completed by the Applicant (Taney Engineering 2011a) included calculation of the potential for scour to destabilize structures constructed on the site.

The scour analysis was conducted for the 100 year flood scenario, and included an analysis of the project area without implementation of upstream debris basins, and then with implementation of upstream debris basins. The analysis demonstrated that, without stormwater management, scour depths of up to 4.1 feet could occur around the support posts of the solar arrays. This depth of scour would not be large enough to destabilize the arrays because of the depth of installation of the supports, and the fact that each array is supported by multiple posts. The scour calculation for the post-development condition, which would include debris basins to slow stormwater and release it as sheet flow across the solar array area, would be approximately 2 feet in depth. Again, this depth would not be high enough to destabilize site structures. The Applicant's Storm Water Management Plan includes provisions to inspect the site following storm events, and any scour of this magnitude would be found and corrected.

Any diversion of stormwater flow by site structures would be limited in extent. Diverted flow would likely be re-directed for a few feet around any site structures, and would be unlikely to leave the project area. Downstream structures and infrastructure such as the Primm Valley Golf Course, I-15, and the Calnev are each more than a mile away, and would not be affected by the very localized diversion of flow around site structures.

Maintaining these results depends on continued operation of the debris and sediment basins as they are designed to operate. Mitigation measure MM-Water-9 would require the Applicant to implement their Storm Water Management Plan (First Solar 2012k), which specifies how the debris and sediment basins would be designed, inspected, and maintained to ensure their

continued operation. With implementation of the Storm Water Management Plan, impacts would be less than significant.

WR-10

Construction, Operations, and Decommissioning

Based on the setting of the proposed facility on flat ground near the Dry Lake bed, and several miles from the Clark Mountains, there is no potential for the facility to be impacted by mudflow, or to cause mudflow. Impacts would be less than significant.

4.19.4 Alternative 2: 2,385 Ac Alternative

4.19.4.1 Direct and Indirect Impacts

Alternative 2 is conceptually similar to the Proposed Action (Alternative 1), but would cover a slightly different land area comprising 2,385 acres in a bifurcated footprint, resulting in the facility being situated differently with respect to water resources.

Under Alternative 2, the Stateline facility would be required to comply with all applicable water quality standards and waste discharge requirements, as presented in Section 3.19.2 of this *PA and* EIS/EIR. Mitigation measure MM-Water-1 (*Demonstrate Compliance with Water Quality Permits)* requires the Applicant to demonstrate compliance with all applicable permitting requirements prior to commencing construction, which will ensure that the proposed Stateline facility is in compliance with all applicable water quality permits and waste discharge requirements associated with construction, operation, and decommissioning activities.

Construction

Groundwater Supply and Recharge

The amount of water to be used under Alternative 2 would be the same as that for the Proposed Action. Approximately 1,900 ac-ft of water would be needed during the approximately 2 to 4 year construction period, with the majority of the construction water use occurring during the site preparation period of the first year. Water uses include soil compaction, dust control, and sanitary needs. The peak daily water *withdrawal* is estimated to be approximately 1.5 million gpd. Under Alternative 2, water supply would be provided by two new groundwater wells. The North Well, which would provide water to support construction of the northern portion of the facility and all operational water for the facility, would be located at the same location proposed for the primary well in the Proposed Action. The South Well, which would provide water to support construction of the southern portion of the facility and would serve as a back-up well during operations, would be located south of the Primm Valley Golf Course near the Yates Well Road exit in I-15.

In addition, three groundwater monitoring wells would be installed to evaluate potential impacts to groundwater availability and quality. The production wells would be 12 inches in diameter and 670 feet deep, with a screened interval located at a depth of 430 to 630 feet below ground surface. *The depths of the monitoring wells would be determined, on a site-specific basis, to ensure adequate monitoring of the elevation of the groundwater table.* The monitoring wells would include two located in the northern portion of the bifurcated footprint, and one located in the southern portion.

Basin-Wide Overdraft

The analysis of the availability of water within the IVGB is the same for Alternative 2 as with the Proposed Action. As shown in Table 4.19-1, the total water balance in the basin would remain positive during construction of Alternative 2, in the range of 530 to 1,845 ac-ft/yr. Therefore, construction of Alternative 2 would not have any adverse impact associated with basin-wide overdraft issues.

Local Drawdown

Similar to the Proposed Action, a large amount of the current and future groundwater usage in the IVGB occurs within a limited area of the basin to the southwest of Primm. The wells for the two largest water users in the basin (Primm and the Primm Valley Golf Course), as well as the Ivanpah SEGS groundwater well, are all within less than 3 miles of the wells for Alternative 2. In all, more than 4,000 ac-ft/yr (almost 61 percent) of the total 6,584 ac-ft/yr withdrawn in the basin would be withdrawn from this limited area of the basin. Therefore, although the basin as a whole can likely support the groundwater withdrawal rates, there is likely to be local groundwater level decline.

The Applicant has conducted modeling of groundwater withdrawal to estimate the impact of Alternative 2 groundwater withdrawal on groundwater levels in nearby wells. The modeling was conducted using a 2-year construction period scenario and a 4-year construction period scenario. Of these, the two year analysis is the more conservative because it concentrates a greater volume of withdrawal into a shorter time period.

The results of the Applicant's analysis for Alternative 2 indicate that groundwater level declines in the other wells over the entire construction, operations, and decommissioning duration would range from *1.45* feet at well WP-5*, 1.90 feet at* WP-6, *0.90* feet at Ivanpah SEGS, *2.37* feet at Colosseum 1, and *3.04* feet at Colosseum 2 (West Yost 2011). As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), long-term declines in these wells have already ranged from 4 to 5 feet. However, the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria. Therefore, the additional decline provided by the Stateline wells would be an adverse impact, but their contribution would be minor compared to other wells. Predicted water level declines in the Primm wells are even smaller than those in the Colosseum wells, and are not expected to result in an adverse impact.

The Applicant has developed a Groundwater Monitoring and Reporting Plan (West Yost *2013b*) to fulfill the requirements of the San Bernardino County groundwater monitoring program guidelines. Implementation of the plan would be required as part of mitigation measure MM-Water-3. The plan addresses installation of three monitoring wells, specification of a monitoring network, means to establish baseline groundwater conditions, data to be collected in the program, and means to compare collected data to baseline data.

The plan also provides interim significance criteria that the Applicant proposes to use for the first five years, and which would then be updated based on information collected during the first five year period. The proposed criterion is based on a 20 percent increase over the simulated drawdown at *any monitoring point.* The baseline simulation of a drawdown of 0.23 feet *at a distance of 1.5 miles from the primary well* is based on the predicted drawdown following four years of construction and one year of operations. If the monitoring program documents a drawdown that exceeds the criterion, then *mitigation measure MM-Water-3 would require that a more detailed analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted.*

The following mitigation measures would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the

Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration*, which in turn would assist in providing freshwater to the aquifer*. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project.

Surface Water and Drainage Patterns

The impact of Alternative 2 on surface water and drainage patterns would be the same under construction, operations and maintenance, and decommissioning. This is because any potential impact would be associated with vegetation removal, site grading, implementation of debris and sediment basins, and existence of infrastructure on the project site. Once vegetation removal, grading, and basin construction is completed during early phases of construction, potential impacts of the facility on stormwater flow would remain the same throughout the remainder of the construction period, and into the operations and decommissioning period. Therefore, this analysis is presented here under construction, but is not repeated for operations and decommissioning of Alternative 2.

The situation of the Alternative 2 site layout on an active alluvial fan system characterized by numerous ephemeral drainages would be similar to that for the Proposed Action. However, the Alternative 2 site layout would include a southern portion that lies within different drainage subbasins than the Proposed Action.

To evaluate and develop responses to potential impacts, the Applicant has conducted hydrologic modeling to predict stormwater flow conditions, designed the Alternative 2 site layout to incorporate protective features, and then included these protective features in additional modeling to verify that they would protect both the facility and the downgradient areas. The modeling methodology and assumptions used were the same as those used for the analysis of the Proposed Action. Like the Proposed Action, Alternative 2 would include avoidance of drainage channels, implementation of upgradient debris basins, grading of the PV array areas, implementation of downgradient sediment basins, and use of silt fence and fiber rolls to manage stormwater.

The modeling effort identified eight drainage subbasins totaling more than 33,000 acres providing stormwater flow into the project area. The resulting flow rate calculations are shown in Table 4.19-4.

Table 4.19-4. Comparison of Existing and Post-Development Flow Rates, Alternative 2

Sub-Basin	Existing Flow Rates (cubic feet per second)				Post-Development Flow Rates (cubic feet per second)			
	1.2 yr	10 yr	25 yr	100 yr	1.2 yr	10 yr	25 yr	100 yr
1	530	2,927	4,009	6,624	541	2,950	4,033	6,638
2	548	3,134	4,301	7,215	557	3,160	4,329	7,233
3	280	1,602	2,213	3,742	285	1,615	2,226	3,751
4	326	1,884	2,597	4,381	329	1,891	2,605	4,386
5	419	2,346	3,229	5,420	419	2,346	3,229	5,420
6	432	2,358	3,225	5,334	437	2,367	3,235	5,340
7	554	3,329	4,604	7,835	561	3,346	4,622	7,847
8	213	1,032	1,402	2,266	214	1,033	1,403	2,266
Average Percentage Change in Flow Rate					**+1.16%**	**+0.48%**	**+0.37%**	**+0.14%**

The flow rates presented in Table 4.19.4 show that, on average, the development of Alternative 2 would increase flow rates in the subbasins by a maximum of about 1.2 percent. In general, the reason that the development would have such a limited effect on flow rates is because stormwater velocities would be deliberately slowed by the use of the debris and sediment basins. Based on these results, Alternative 2 would not be subjected to increased potential for flood damage, and would not modify erosion or sedimentation rates in downstream areas.

Maintaining these results depends on continued operation of the debris and sediment basins as they are designed to operate. Mitigation measure MM-Water-9 would require the Applicant to implement their Storm Water Management Plan (First Solar 2012k), which specifies how the debris and sediment basins would be designed, inspected, and maintained to ensure their continued operation. BLM has reviewed the design of the basins on the Applicant's site plans, the proposed methods for inspection and maintenance in the Storm Water Management Plan, and the methodologies and input parameters for the hydrologic modeling, and concludes that Alternative 2 would not be subjected to increased potential for flood damage, and would not modify erosion or sedimentation rates in downstream areas.

Stormwater Drainage Systems

Similar to the discussion of surface water and drainage pattern impacts, the impact of Alternative 2 on stormwater drainage systems would be the same under construction, operations and maintenance, and decommissioning. This is because any potential impact would be associated with modification of stormwater flow pathways, volumes, or velocities, and these modifications would occur during initial stages of construction and be maintained throughout the operations and decommissioning periods. Therefore, this analysis is presented here under construction, but is not repeated for operations and decommissioning of Alternative 2.

No designed stormwater drainage system currently exists in the area of the proposed Stateline facility site. Implementation of Alternative 2 would include construction of drainage systems including debris basins, sediment basins, and culverts on the project site itself to protect onsite facilities and ensure that stormwater released downstream of the facility mimics pre-development conditions. The project would not include construction or modification of any stormwater systems either upgradient or downgradient of the facility. Therefore, Alternative 2 would not have the potential to create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems and, therefore, no mitigation measures are required to address potential effects to existing or planned stormwater drainage systems.

Flood Hazard Areas

Similar to the discussion of drainage pattern and drainage system impacts, the impact of Alternative 2 associated with flood hazard areas would be the same under construction, operations and maintenance, and decommissioning. This is because any potential impact would be associated with modification of stormwater flow pathways, volumes, or velocities, and these modifications would occur during initial stages of construction and be maintained throughout the operations and decommissioning periods. Therefore, this analysis is presented here under construction, but is not repeated for operations and decommissioning of Alternative 2.

Alternative 2 would be located in FEMA Zone D, which is classified as an area where flood hazards have not been mapped (FEMA 2008). Although a flood hazard analysis has not been conducted by FEMA for this area, the hydrologic study and modeling completed by the

Applicant (Taney Engineering 2011b) included calculation of the potential for scour to destabilize structures constructed on the site.

The scour analysis was conducted for the 100 year flood scenario, and included an analysis of the project area without implementation of upstream debris basins, and then with implementation of upstream debris basins. The analysis demonstrated that, without stormwater management, scour depths of up to 4.4 feet could occur around the support posts of the solar arrays. This depth of scour would not be large enough to destabilize the arrays because of the depth of installation of the supports, and the fact that each array is supported by multiple posts. The scour calculation for the post-development condition, which would include debris basins to slow stormwater and release it as sheet flow across the solar array area, would be approximately 2.1 feet in depth. Again, this depth would not be high enough to destabilize site structures. The Applicant's Storm Water Management Plan includes provisions to inspect the site following storm events, and any scour of this magnitude would be found and corrected.

Water Quality

Surface Water

Construction of the facility under Alternative 2 would include implementation of a Construction SWPPP, in compliance with mitigation measures MM-Water-8 and Section 402 of the CWA (see Section 3.19.2.1 of this *PA and* EIS/EIR), which specifies BMPs to minimize and/or avoid potential impacts associated with stormwater runoff. The SWPPP would incorporate standard BMPs to protect water quality and avoid adverse effects of project construction on surface water quality, including BMPs to prevent drainage pattern alterations to result in adverse effects to surface waters.

The potential for construction of Alternative 2 to contribute sources of polluted runoff if an accidental leak or release of harmful materials were to occur during construction activities would be the same as evaluated for the Proposed Action. The Applicant has developed an Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, which includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and requirements for notices to federal and local emergency response authorities. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. The types and volumes of fuels and hazardous materials would be the same under Alternative 2 as in the Proposed Action. In addition, the Applicant would site all fueling, hazardous materials storage areas, and operation and maintenance activities involving hazardous materials at least 100 feet away from blue-line drainages as identified on USGS topography maps. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, potential impacts associated with the creation of polluted runoff under Alternative 2 would be minimized and/or avoided.

Groundwater

The management of hazardous materials and fuels during construction of Alternative 2 would be the same as discussed above for surface water. The regulatory requirements, mitigation

measures (specifically, MM-PH&S-2 and MM-Water-10), and management plans that would minimize the potential for release of contaminants to surface water would also be effective in minimizing the potential for their release to groundwater. Given the depth to groundwater at the site (approximately 200 feet), it is highly unlikely that any release of fuel or hazardous materials on the surface could reach groundwater. Any releases would likely be very small in volume, and would be identified and remediated before they could migrate the large distance to groundwater. Therefore, contamination of groundwater by the release of contaminants under Alternative 2 is very unlikely.

The Applicant's proposed use of a temporary septic tank and leach field system for the construction office area could potentially have an adverse impact on soil, surface water, or groundwater quality. Mitigation measure MM-Water-12 would require that the Applicant use portable toilet facilities throughout the project site during construction.

Mobilization of existing poor quality groundwater is a potential concern for Alternative 2, as it is for the Proposed Action. As discussed in Section 4.19.3.1, mobilization of high salinity groundwater has been documented to occur in the local area as a result of groundwater withdrawal from the Primm (WP-5 and WP-6) and Primm Valley Golf Course (PVGC-7, PVGC-8, PVGC-9, Colosseum 1, and Colosseum 2) wells (Broadbent 2002; Broadbent 2009). Under Alternative 2, the location of the North Well in close proximity to the Dry Lake, and the withdrawal rate from that well during construction being comparable to the rates of the WP, PVGC, and Colosseum wells, indicates that water production during construction could potentially result in mobilization of saline water from depth or from the Dry Lake. It is likely that this impact would occur if the peak construction production rate were to occur over the long-term, but it is less certain that the effect would occur within the relatively short duration of peak groundwater usage, which would be only one year during construction.

Based on the proximity of the proposed project North Well to the Dry Lake, it is likely that original TDS concentrations in these wells would be in the range of 500 to 800 mg/L or greater. It is also likely that TDS concentrations would increase throughout the duration of the construction period, an effect which could be enhanced due to the concurrent pumping of the Primm wells. This impact would be adverse, but would likely be temporary during and shortly following construction. Once pumping rates are reduced to minimal levels during operations, groundwater recharge from higher elevations on the alluvial fan would likely restore groundwater quality to original levels.

The Applicant's Groundwater Monitoring and Reporting Plan has been reviewed by the County, meets County requirements, and would be sufficient to evaluate potential water quality impacts associated with Alternative 2. However, the Plan does not define a water quality criterion that would be used to identify impacts. Therefore, mitigation measure MM-Water-3 includes a requirement that the Applicant consult with the County and BLM to establish a baseline for the water quality criteria.

Implementation of the Groundwater Monitoring and Reporting Plan and the following mitigation measures would help to ensure that groundwater quality impacts do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse water quality impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration, which in turn would assist in providing freshwater to the aquifer. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume

of water use by the project. As discussed for construction of Alternative 1, Mitigation Measure MM-Water-11, would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard.

Mudflow

Although the site location is different under Alternative 2 than the Proposed Action, the general setting on flat ground near the Dry Lake bed and several miles from the Clark Mountains indicates that there is no potential for the facility under Alternative 2 to be impacted by mudflow, or to cause mudflow, during construction, operations, or decommissioning. Because there would be no impacts under any phase of the project, this analysis is presented here under construction, but is not repeated for operations and decommissioning of Alternative 2.

Operation and Maintenance

Groundwater Supply and Recharge

The only water use associated with operations of Alternative 2 would be the use of no more than 20 ac-ft/yr of water for sanitary purposes. No water would be used for cleaning solar panels during operations.

Basin-Wide Overdraft

The situation of the production wells under operations with respect to basin-wide overdraft concerns is the same as evaluated under construction of Alternative 2. A comparison of the groundwater recharge rate and potential basin pump rates was shown in Table 4.19-1, and that analysis concluded that the total water balance in the basin during construction of Alternative 2 would remain positive, in the range of 530 to 1,845 ac-ft/yr. That analysis included an assumption of an extraction rate of 1,045 ac-ft/yr for the Stateline facility, which is the highest rate that would be anticipated during construction. During operations of Alternative 2, that rate would drop to 20 ac-ft/yr. Therefore, the available water balance during operations of Alternative 2 would be much higher, in the range of 1,586 to 2,901 ac-ft/yr, and there would be no adverse impact.

Local Drawdown

The analysis of the effect of local drawdown presented for construction of Alternative 2 is also applicable to operations. The modeling conducted by the Applicant included a construction period of 2 years and 4 years, followed by a 30-year operational period.

The results of the Applicant's analysis for Alternative 2 indicate that groundwater level declines in the other nearby wells over the entire construction, operations, and decommissioning duration would range from *1.45 feet at well WP-5, 1.90 feet at WP-6, 0.90 feet at Ivanpah SEGS, 2.37 feet at Colosseum 1, and 3.04 feet at Colosseum 2* (West Yost 2011). As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), long-term declines in these wells have already ranged from 4 to 5 feet. In addition, the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria. In general, the water withdrawal rate of 20 ac-ft/yr during operations is minimal compared to rates of 860 ac-ft/yr for Primm, 1,800 ac-ft/yr for the Primm Valley Golf Course, and 100 ac-ft/yr for

Ivanpah SEGS. Therefore, the additional decline provided by the Stateline wells under operations of Alternative 2 would be a minor impact.

The Applicant's Groundwater Monitoring and Reporting Plan (West Yost *2013b*) would also be applicable to the project operations under Alternative 2. The following mitigation measures would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project.

Water Quality

Surface Water

The potential for operations of Alternative 2 to contribute sources of polluted runoff if an accidental leak or release of harmful materials were to occur would be the same as evaluated for the Proposed Action. The Applicant has developed an Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, which includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and requirements for notices to federal and local emergency response authorities. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. The types and volumes of fuels and hazardous materials would be the same under Alternative 2 as in the Proposed Action. In addition, the Applicant would site all fueling, hazardous materials storage areas, and operation and maintenance activities involving hazardous materials at least 100 feet away from blue-line drainages as identified on USGS topography maps. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, potential impacts associated with the creation of polluted runoff would be minimized and/or avoided.

Groundwater

The management of hazardous materials and fuels during operations of Alternative 2 would be the same as discussed above for surface water. The regulatory requirements, mitigation measures (specifically, MM-PH&S-2 and MM-Water-10), and management plans that would minimize the potential for release of contaminants to surface water would also be effective in minimizing the potential for their release to groundwater. An additional requirement during operations would be development and implementation of a SPCC Plan to manage the presence of oil-containing transformers. The SPCC Plan would identify hazardous materials managed onsite during operations, specify the use of appropriate spill containment and cleanup kits to contain accidental hazardous material releases, and specify inspection and response procedures and responsibilities. The Applicant's Emergency Response and Hazardous

Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, would ensure that hazardous materials and wastes would be handled in a safe and environmentally sound manner to prevent releases and in compliance with the requirements set forth in the applicable codes and regulations. Best management practices by the Applicant as presented in the SPCC Plan would ensure that the Applicant minimizes, avoids, or cleans up unforeseen spills of hazardous material. Given the depth to groundwater at the site (approximately 200 feet), it is highly unlikely that any release of fuel or hazardous materials on the surface could reach groundwater. Any releases during operations of Alternative 2 would likely be very small in volume, and would be identified and remediated before they could migrate the large distance to groundwater. Therefore, contamination of groundwater by the release of contaminants is very unlikely.

Mobilization of existing poor quality groundwater, as discussed for construction, would likely not be a concern during operations of Alternative 2 due to the low volumes of water that would be produced from the new groundwater wells. Although the wells could be subject to increased salinity during construction, this effect would likely be temporary, and would dissipate when production levels are reduced to no more than 20 ac-ft/yr during operations.

The Applicant's Groundwater Monitoring and Reporting Plan would also be applicable during project operations of Alternative 2. The following mitigation measures would help to ensure that groundwater quality impacts do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse water quality impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration, which in turn would assist in providing freshwater to the aquifer. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. Mitigation Measure MM-Water-11, would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard.

Decommissioning

Groundwater Supply and Recharge

The Applicant has not defined the amount of water that would be required for dust control during decommissioning of the project. Given that decommissioning of Alternative 2 would require earth-moving activities across the same total acreage as construction, this evaluation assumes that decommissioning would require, at a maximum, the same volume of water as construction. The impacts of this water use, including water level declines in nearby wells and the potential to mobilize saline groundwater from depth or from the dry lake, would be the same as evaluated for construction of Alternative 2. In addition, the mitigation measures required for construction would also apply to decommissioning. In practice, it is likely that water use during decommissioning would be much less than construction, because the duration would be shorter. The water would be obtained from the same two groundwater production wells that would supply water for construction and operations.

Basin-Wide Overdraft

The situation of the proposed production wells under decommissioning with respect to basin-wide overdraft concerns is the same as evaluated under construction. A comparison of the groundwater recharge rate and potential basin pump rates was shown in Table 4.19-1, and that analysis concluded that the total water balance in the basin during construction would remain positive for Alternative 2, in the range of 530 to 1,845 ac-ft/yr. That analysis included an assumption of an extraction rate of 1,045 ac-ft/yr for the Stateline facility, which is the highest rate that would be anticipated during construction. During decommissioning, the rate could rise again to 1,045 ac-ft/yr, but for a much shorter duration than construction. Therefore, the available water balance during decommissioning would be in the range of 1,586 to 2,901 ac-ft/yr, and there would be no adverse impact.

Local Drawdown

The analysis of the effect of local drawdown presented for construction of Alternative 2 is also applicable to decommissioning. The modeling conducted by the Applicant included a construction period of 2 years and 4 years, followed by a 30-year operational period.

The results of the Applicant's analysis for Alternative 2 indicate that groundwater level declines in the other nearby wells over the entire construction, operations, and decommissioning duration would range from *1.45 feet at well WP-5, 1.90 feet at WP-6, 0.90 feet at Ivanpah SEGS, 2.37 feet at Colosseum 1, and 3.04 feet at Colosseum 2* (West Yost 2011). As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), long-term declines in these wells have already ranged from 4 to 5 feet. In addition, the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria. Therefore, the additional decline provided by the Stateline wells under Alternative 2 would be a minor impact.

The Applicant's Groundwater Monitoring and Reporting Plan (West Yost *2013b*) would also be applicable to the project decommissioning under Alternative 2. The following mitigation measures would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project.

Water Quality

Surface Water

Decommissioning of Alternative 2 would include use of the same types and amounts of fuels and hazardous materials as construction, but for a shorter duration. The Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, would be applicable to project decommissioning. This Plan includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and requirements for notices to federal and local emergency response authorities. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. Once decommissioning is completed, remaining fuel and hazardous materials would be removed from the site, and any waste materials would be disposed offsite in

accordance with regulatory requirements. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, potential impacts associated with the creation of polluted runoff under Alternative 2 would be minimized and/or avoided.

Groundwater

The management of hazardous materials and fuels during decommissioning of Alternative 2 would be the same as discussed above for surface water. The regulatory requirements, mitigation measures (specifically, MM-PH&S-2 and MM-Water-10), and management plans that would minimize the potential for release of contaminants to surface water would also be effective in minimizing the potential for their release to groundwater. The Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, would ensure that hazardous materials and wastes would be handled in a safe and environmentally sound manner to prevent releases and in compliance with the requirements set forth in the applicable codes and regulations. Given the depth to groundwater at the site (approximately 200 feet), it is highly unlikely that any release of fuel or hazardous materials on the surface could reach groundwater. Any releases during decommissioning of Alternative 2 would likely be very small in volume, and would be identified and remediated before they could migrate the large distance to groundwater. Therefore, contamination of groundwater by the release of contaminants is very unlikely.

Mobilization of existing poor quality groundwater, as discussed for construction, *could also occur during decommissioning*. Although the wells could be subject to increased salinity during construction, this effect would likely be temporary, and would dissipate when production levels are reduced to no more than 20 ac-ft/yr during operations. During decommissioning, the rate could rise again to 1,045 ac-ft/yr, but for a much shorter duration than construction. *The effect would then dissipate again after decommissioning, when groundwater production ceases.*

The Applicant's Groundwater Monitoring and Reporting Plan would also be applicable during project decommissioning of Alternative 2. The following mitigation measures would help to ensure that groundwater quality impacts do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse water quality impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration, which in turn would assist in providing freshwater to the aquifer. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. Mitigation Measure MM-Water-11, would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard.

Modify Boundary of Ivanpah DWMA

The action of modifying the boundary of the Ivanpah DWMA under Alternative 2 would be the same as that for the Proposed Action. This action would not require construction of any structures, use of water resources, or use of hazardous materials that could impact water quality. There would be no impacts to water resources associated with the modified DWMA boundary.

4.19.4.2 CEQA Significance Determinations

WR-1

Construction

Surface Water

Construction of Alternative 2 would include implementation of a Construction SWPPP, in compliance with mitigation measures MM-Water-8 and Section 402 of the CWA (see Section 3.19.2.1 of this *PA and* EIS/EIR), which specifies BMPs to minimize and/or avoid potential impacts associated with stormwater runoff. The Applicant has also developed an Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, which includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and requirements for notices to federal and local emergency response authorities. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. Fuel storage (for construction vehicles and equipment) would be a temporary activity occurring only for as long as is needed to support construction activities. In addition, the Applicant would site all fueling, hazardous materials storage areas, and operation and maintenance activities involving hazardous materials at least 100 feet away from blue-line drainages as identified on USGS topography maps. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, potential impacts associated with the creation of polluted runoff under Alternative 2 would be minimized and/or avoided. Impacts with respect to WR-1 would be less than significant.

Groundwater

Potential degradation of groundwater quality could occur under Alternative 2 if the project releases contaminants to groundwater, or caused mobilization of existing poor quality groundwater.

With respect to the release of contaminants, the management of hazardous materials and fuels during construction would be the same as discussed above for surface water. The regulatory requirements, mitigation measures (specifically, MM-PH&S-2 and MM-Water-10), and management plans that would minimize the potential for release of contaminants to surface water under Alternative 2 would also be effective in minimizing the potential for their release to groundwater. Given the depth to groundwater at the site (approximately 200 feet), it is highly unlikely that any release of fuel or hazardous materials on the surface could reach groundwater.

Any releases would likely be very small in volume, and would be identified and remediated before they could migrate the large distance to groundwater. Therefore, contamination of groundwater by the release of contaminants under Alternative 2 is very unlikely, and impacts would be less than significant.

The Applicant's proposed use of a temporary septic tank and leach field system for the construction office area could potentially impact soil, surface water, or groundwater quality. Mitigation measure MM-Water-12, which would require that the Applicant use portable toilet facilities throughout the project site during construction, would ensure that this impact would be less than significant.

Mobilization of existing poor quality groundwater is a potential concern for Alternative 2. As discussed in Section 4.19.3.1, mobilization of high salinity groundwater has been documented to occur in the local area as a result of groundwater withdrawal from the Primm (WP-5 and WP-6) and Primm Valley Golf Course (PVGC-7, PVGC-8, PVGC-9, Colosseum 1, and Colosseum 2) wells (Broadbent 2002; Broadbent 2009). The location of the proposed North Well in close proximity to the Dry Lake, and the withdrawal rate from that well during construction of Alternative 2 being comparable to the rates of the WP, PVGC, and Colosseum wells, indicates that water production during construction could potentially result in mobilization of saline water from depth or from the Dry Lake. It is likely that this impact would occur if the peak construction production rate were to occur over the long-term, but it is less certain that the effect would occur within the relatively short duration of peak groundwater usage, which would be only one year during construction. If the water quality degraded to the point of being unacceptable, the Applicant would acquire water from the secondary well, which is situated in a location that is less likely to be affected by saline intrusion. If use of that well were not possible or did not address the issue, the Applicant would use on-site groundwater treatment. The impact would be adverse and most significant during and shortly following construction. Once pumping rates are reduced to minimal levels during operations, groundwater recharge from higher elevations on the alluvial fan would likely reduce, arrest or reverse the lateral movement of saline groundwater and, over time, would likely restore groundwater quality to pre-project levels.

In general, the BLM and County review of the Plan indicates that it meets County requirements, and would be sufficient to evaluate potential water quality impacts associated with Alternative 2. However, the Plan does not define a water quality criterion that would be used to identify impacts. Therefore, mitigation measure MM-Water-3 includes a requirement that the Applicant consult with the County and BLM to establish a baseline for the water quality criteria.

The following mitigation measures would help to ensure that groundwater quality impacts do not occur under Alternative 2. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse water quality impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration, which in turn would assist in providing freshwater to the aquifer. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. Mitigation Measure MM-Water-11, would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard. With these measures, and application of the proposed provisional significance criterion based on a 20 percent increase in chloride concentrations as defined in the baseline, the impact of Alternative 2 would be reduced to less than significant levels.

Operation and Maintenance

Potential risks associated with release of pollutants to surface water or groundwater would be substantially lower during operations of Alternative 2 than during construction, due to the much smaller volumes of these materials that would be present onsite during operations. With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, potential impacts associated with the creation of polluted runoff would be minimized and/or avoided. Impacts with respect to WR-1 under Alternative 2 would be less than significant.

Mobilization of existing poor quality groundwater, as discussed for construction, would likely not be a concern during operations of Alternative 2 due to the low volumes of water that would be produced from the new groundwater wells. Although the wells could be subject to increased salinity during construction, this effect would likely be temporary, and would dissipate when production levels are reduced to no more than 20 ac-ft/yr during operations. The Applicant's Groundwater Monitoring and Reporting Plan would be implemented during project operations. The following mitigation measures would help to ensure that groundwater quality impacts do not occur under Alternative 2. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse water quality impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration, which in turn would assist in providing freshwater to the aquifer. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. Mitigation Measure MM-Water-11, would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard. With implementation of these mitigation measures, impacts of Alternative 2 would be less than significant.

Decommissioning

Decommissioning of Alternative 2 would include use of the same types and amounts of fuels and hazardous materials as construction, but for a shorter duration. The Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, would be applicable to project decommissioning. With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, potential impacts associated with the creation of polluted runoff would be minimized and/or avoided. Impacts of Alternative 2 with respect to WR-1 would be less than significant.

Mobilization of existing poor quality groundwater, as discussed for construction, *could also occur during decommissioning*. Although the wells could be subject to increased salinity during construction, this effect would likely be temporary, and would dissipate when production levels are reduced to no more than 20 ac-ft/yr during operations. During decommissioning, the rate could rise again to 1,045 ac-ft/yr, but for a much shorter duration than construction. *The effect would then dissipate again after decommissioning, when groundwater production ceases.* The

Applicant's Groundwater Monitoring and Reporting Plan would also be applicable during project decommissioning. The following mitigation measures would help to ensure that groundwater quality impacts do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse water quality impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration, which in turn would assist in providing freshwater to the aquifer. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. Mitigation Measure MM-Water-11, would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard. With implementation of these mitigation measures, impacts of Alternative 2 would be less than significant.

WR-2

Construction

As discussed for direct and indirect impacts for construction, the total water balance in the basin would remain positive during construction of Alternative 2, in the range of 530 to 1,845 ac-ft/yr. Therefore, the overall IVGB is not currently in overdraft, and water withdrawal under Alternative 2 would not result in placing it into overdraft.

The Applicant's modeling of the impact of water withdrawal during construction was performed using the bifurcated footprint of the facility evaluated as part of Alternative 2, and indicated that drawdown effects would be limited. The results of the Applicant's analysis for Alternative 2 indicate that groundwater level declines in the other wells would range from *1.45 feet at well WP-5, 1.90 feet at WP-6, 0.90 feet at Ivanpah SEGS, 2.37 feet at Colosseum 1, and 3.04 feet at Colosseum 2* (West Yost 2011). As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), long-term declines in these wells have already ranged from 4 to 5 feet. However, the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria. Therefore, the additional decline provided by the Stateline wells under Alternative 2 would be a minor impact, and impacts would be less than significant.

Application of the provisional significance criterion to be used to evaluate groundwater level impacts in the Applicant's Groundwater Monitoring and Reporting Plan, along with mitigation measures, would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur under Alternative 2. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration*, which in turn would assist in providing freshwater to the aquifer*. Measure MM-Water-6 would require employee training on water conservation in order

to reduce the volume of water use by the project. With implementation of these mitigation measures, impacts of Alternative 2 would be less than significant.

Operation and Maintenance

The only water use associated with operations of Alternative 2 would be the use of no more than 20 ac-ft/yr of water for sanitary purposes. No water would be used for cleaning solar panels during operations.

The analysis of the effect of local drawdown presented for construction of Alternative 2 is also applicable to operations. The modeling conducted by the Applicant included a construction period of 2 years and 4 years, followed by a 30-year operational period.

The results of the Applicant's analysis for Alternative 2 indicate that groundwater level declines in the other nearby wells over the entire construction, operations, and decommissioning duration would range from *1.45 feet at well WP-5, 1.90 feet at WP-6, 0.90 feet at Ivanpah SEGS, 2.37 feet at Colosseum 1, and 3.04 feet at Colosseum 2* (West Yost 2011). As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), long-term declines in these wells have already ranged from 4 to 5 feet. In addition, the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria. In general, the water withdrawal rate of 20 ac-ft/yr during operations is minimal compared to rates of 860 ac-ft/yr for Primm, 1,800 ac-ft/yr for the Primm Valley Golf Course, and 100 ac-ft/yr for Ivanpah SEGS. Therefore, the additional decline provided by the Stateline wells under Alternative 2 would be a minor impact, and would be less than significant.

The Applicant's Groundwater Monitoring and Reporting Plan (West Yost *2013b*) would also be applicable to the project operations under Alternative 2. The following mitigation measures would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. With implementation of these mitigation measures, impacts of Alternative 2 would be less than significant.

Decommissioning

The analysis of the effect of local drawdown presented for construction of Alternative 2 is also applicable to decommissioning. The modeling conducted by the Applicant included a construction period of 2 years and 4 years, followed by a 30-year operational period.

The results of the Applicant's analysis for Alternative 2 indicate that groundwater level declines in the other nearby wells would range from *1.45 feet at well WP-5, 1.90 feet at WP-6, 0.90 feet at Ivanpah SEGS, 2.37 feet at Colosseum 1, and 3.04 feet at Colosseum 2* (West Yost 2011). As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), long-term declines in these wells have already ranged from 4 to 5 feet. In addition, the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria. Therefore, the additional decline provided by the Stateline wells under Alternative 2 would be a minor impact, and would be less than significant.

The Applicant's Groundwater Monitoring and Reporting Plan (West Yost *2013b*) would also be applicable to the project decommissioning. The following mitigation measures would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. With implementation of these mitigation measures, impacts of Alternative 2 would be less than significant.

WR-3

Construction, Operations, and Decommissioning

The Alternative 2 site location would be situated on an active alluvial fan system characterized by numerous ephemeral drainages that only flow during substantial precipitation events. By design, the project would deliberately alter the existing drainage within the project area. This design would be implemented in the early stages of construction, and would then remain in places throughout operations and decommissioning. Therefore, impacts would be the same for all three stages of the project.

The facility would be developed by removal of all site vegetation, grading of the project site to a smooth surface, and implementation of upgradient debris basins that would capture channelized stormwater flow and release it across the site as sheet flow. Stormwater leaving the downgradient edge of the site would also be captured in sediment basis, and released to downgradient areas. Sediment captured within these basins would be removed on an as needed basis, as directed by the Applicant's Storm Water Management Plan, and would be spread over the areas downgradient of the basins.

The Applicant has used hydrologic modeling, as has been applied on other sites evaluated by BLM and the County, to design the size, locations, and other characteristics of their debris and sediment basins to ensure that stormwater volume and velocity downgradient of the facility matches pre-development conditions. Sediment captured in the onsite system would be spread downgradient of the site, and would thus re-enter the system. Stormwater velocities under Alternative 2 were modeled to increase by a maximum of about 1.16 percent, which would not result in modification of sedimentation or erosion. Although stormwater would be released downgradient of the facility as sheet flow, in order to avoid erosion impacts immediately downgradient, it would rapidly re-develop into channels a short distance downgradient, and would therefore not affect the natural drainage.

Maintaining these results depends on continued operation of the debris and sediment basins as they are designed to operate. Mitigation measure MM-Water-9 would require the Applicant to implement their Storm Water Management Plan (First Solar 2012k), which specifies how the debris and sediment basins would be designed, inspected, and maintained to ensure their continued operation. BLM has reviewed the design of the basins on the Applicant's site plans, the proposed methods for inspection and maintenance in the Storm Water Management Plan, and the methodologies and input parameters for the hydrologic modeling, and concludes that Alternative 2 would not be subjected to increased potential for flood damage, and would not modify erosion or sedimentation rates in downstream areas. Impacts of Alternative 2 would be less than significant.

WR-4

Construction, Operations, and Decommissioning

The analysis and conclusions developed for criterion WR-3 are also applicable to criterion WR-4. While Alternative 2 would deliberately alter the existing drainage within the project area, the potential for this modification to cause onsite or offsite flooding was evaluated in the Applicant's modeling. Stormwater velocities were modeled to increase by a maximum of about 1.16 percent, which would not cause flooding onsite, or on any offsite areas.

Mitigation measure MM-Water-9 would require the Applicant to implement their Storm Water Management Plan (First Solar 2012k), which specifies how the debris and sediment basins would be designed, inspected, and maintained to ensure their continued operation. Impacts of Alternative 2 would be less than significant.

WR-5

Construction, Operation, and Decommissioning

No designed stormwater drainage system currently exists or is planned in the area of the facility under Alternative 2. Implementation of Alternative 2 would include construction of drainage systems including debris basins, sediment basins, and culverts on the project site itself to protect onsite facilities and ensure that stormwater released downstream of the facility mimics pre-development conditions. Alternative 2 would not include construction or modification of any stormwater systems either upgradient or downgradient of the facility. Therefore, Alternative 2 would not have the potential to create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems and, therefore, no mitigation measures are required to address potential effects to existing or planned stormwater drainage systems. Impacts of Alternative 2 would be less than significant.

WR-8

Construction, Operations, and Decommissioning

The facility under Alternative 2 would be located in FEMA Zone D, which is classified as an area where flood hazards have not been mapped (FEMA 2008). Although the site has not been designated as being within a 100-year floodplain, stormwater flow is known to occur in channels within the project area on a regular basis. Therefore, structures placed into these channels could potentially be subjected to flood damage, or could redirect flow to other areas. To evaluate the potential for flood damage, the hydrologic study and modeling completed by the Applicant (Taney Engineering 2011b) included calculation of the potential for scour to destabilize structures constructed on the site.

The scour analysis was conducted for the 100 year flood scenario, and included an analysis of the Alternative 2 project area without implementation of upstream debris basins, and then with implementation of upstream debris basins. The analysis demonstrated that, without stormwater management, scour depths of up to 4.4 feet could occur around the support posts of the solar arrays. This depth of scour would not be large enough to destabilize the arrays because of the depth of installation of the supports, and the fact that each array is supported by multiple posts. The scour calculation for the post-development condition, which would include debris basins to slow stormwater and release it as sheet flow across the solar array area, would be approximately 2.1 feet in depth. Again, this depth would not be high enough to destabilize site structures. The Applicant's Storm Water Management Plan includes provisions to inspect the site following storm events, and any scour of this magnitude would be found and corrected.

Any diversion of stormwater flow by site structures under Alternative 2 would be limited in extent. Diverted flow would likely be re-directed for a few feet around any site structures, and would be unlikely to leave the project area. Downstream structures and infrastructure such as the Primm Valley Golf Course, I-15, and the Calnev are each more than a mile away, and would not be affected by the very localized diversion of flow around site structures.

Maintaining these results depends on continued operation of the debris and sediment basins as they are designed to operate. Mitigation measure MM-Water-9 would require the Applicant to implement their Storm Water Management Plan (First Solar 2012k), which specifies how the debris and sediment basins would be designed, inspected, and maintained to ensure their continued operation. With implementation of the Storm Water Management Plan, impacts of Alternative 2 would be less than significant.

WR-10

Construction, Operations, and Decommissioning

Based on the setting of the Alternative 2 facility on flat ground near the Dry Lake bed, and several miles from the Clark Mountains, there is no potential for the facility to be impacted by mudflow, or to cause mudflow, during construction, operations, or decommissioning. Impacts of Alternative 2 would be less than significant.

4.19.5 *Revised* Alternative 3: *1,685* Ac Alternative

4.19.5.1 Direct and Indirect Impacts

Revised Alternative 3 is conceptually similar to the Proposed Action (Alternative 1), but would cover a slightly different land area comprising *1,685* acres. In general, the facility under *Revised* Alternative 3 would be situated very similarly to the Proposed Action with respect to water resources. The groundwater production wells would be in the same location in *Revised* Alternative 3 as under the Proposed Action, and the site layout would be in approximately the same location with respect to surface water drainages.

Construction

Under *Revised* Alternative 3, the Stateline facility would be required to comply with all applicable water quality standards and waste discharge requirements, as presented in Section 3.19.2 of this *PA and* EIS/EIR. Mitigation measure MM-Water-1 (*Demonstrate Compliance with Water Quality Permits)* requires the Applicant to demonstrate compliance with all applicable permitting requirements prior to commencing construction, which will ensure that the proposed Stateline facility is in compliance with all applicable water quality permits and waste discharge requirements associated with construction, operation, and decommissioning activities.

Groundwater Supply and Recharge

The amount of water to be used under *Revised* Alternative 3 would be the same as that for the Proposed Action. Approximately 1,900 ac-ft of water would be needed during the approximately 2 to 4 year construction period, with the majority of the construction water use occurring during the site preparation period of the first year. Water uses include soil compaction, dust control, and sanitary needs. The peak daily water *withdrawal* is estimated to be approximately 1.5 million gpd. Under *Revised* Alternative 3, water supply would be provided by two new groundwater wells; the primary well to be located on the southeastern corner of the

facility, and the secondary well located approximately 4,250 feet west of facility. In addition, three groundwater monitoring wells would be installed to evaluate potential impacts to groundwater availability and quality. The production wells would be 12 inches in diameter and 670 feet deep, with a screened interval located at a depth of 430 to 630 feet below ground surface. *The depths of the monitoring wells would be determined, on a site-specific basis, to ensure adequate monitoring of the elevation of the groundwater table.*

Basin-Wide Overdraft

The analysis of the availability of water within the IVGB is the same for *Revised* Alternative 3 as with the Proposed Action. As shown in Table 4.19-1, the total water balance in the basin would remain positive during construction of *Revised* Alternative 3, in the range of 530 to 1,845 ac-ft/yr. Therefore, construction of *Revised* Alternative 3 would not have any adverse impact associated with basin-wide overdraft issues.

Local Drawdown

The well locations and production rates would be the same for *Revised* Alternative 3 as for the Proposed Action, and therefore the modeling results developed and evaluated for the Proposed Action are also applicable to *Revised* Alternative 3. These results indicate that groundwater level declines in the primary well scenario would be: 1.53 feet in WP-5, 1.77 feet in WP-6, 0.55 feet at Ivanpah SEGS, 1.00 feet at Colosseum 1, and 0.63 feet at Colosseum 2. Groundwater level declines in the secondary well scenario would be: 3.18 feet in WP-5, *3.84* feet in WP-6, 0.74 feet at Ivanpah SEGS, 0.57 feet at Colosseum 1, and 0.51 feet at Colosseum 2 (West Yost *2013b*). As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), long-term declines in these wells have already ranged from 4 to 5 feet. However, the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria. Therefore, the additional decline provided by the Stateline wells under *Revised* Alternative 3 would be an adverse impact, but their contribution would be minor compared to that of the other wells.

The Applicant's Groundwater Monitoring and Reporting Plan (West Yost *2013b*), required as part of mitigation measure MM-Water-3, would be applicable to the project under *Revised* Alternative 3. The following mitigation measures would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration*, which in turn would assist in providing freshwater to the aquifer*. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project.

Surface Water and Drainage Patterns

The impact of *Revised* Alternative 3 on surface water and drainage patterns would be the same as those evaluated for the Proposed Action. The situation of the *Revised* Alternative 3 site

layout with respect to the local drainage subbasins is the same as that for the Proposed Action, so the hydrologic analysis for the Proposed Action also applies to *Revised* Alternative 3.

The flow rates presented in Table 4.19.3 show that, on average, the development of *Revised* Alternative 3 would increase flow rates in the subbasins by a maximum of about 2 percent. In general, the reason that the development would have such a limited effect on flow rates is because stormwater velocities would be deliberately slowed by the use of the debris and sediment basins. Based on these results, *Revised* Alternative 3 would not be subjected to increased potential for flood damage, and would not modify erosion or sedimentation rates in downstream areas.

Maintaining these results depends on continued operation of the debris and sediment basins as they are designed to operate. Mitigation measure MM-Water-9 would require the Applicant to implement their Storm Water Management Plan (First Solar 2012k), which specifies how the debris and sediment basins would be designed, inspected, and maintained to ensure their continued operation. BLM has reviewed the design of the basins on the Applicant's site plans, the proposed methods for inspection and maintenance in the Storm Water Management Plan, and the methodologies and input parameters for the hydrologic modeling, and concludes that *Revised* Alternative 3 would not be subjected to increased potential for flood damage, and would not modify erosion or sedimentation rates in downstream areas.

Stormwater Drainage Systems

Similar to the discussion of surface water and drainage pattern impacts, the impact of *Revised* Alternative 3 on stormwater drainage systems would be the same under construction, operations and maintenance, and decommissioning. This is because any potential impact would be associated with modification of stormwater flow pathways, volumes, or velocities, and these modifications would occur during initial stages of construction and be maintained throughout the operations and decommissioning periods. Therefore, this analysis is presented here under construction, but is not repeated for operations and decommissioning of *Revised* Alternative 3.

No designed stormwater drainage system currently exists in the area of the proposed Stateline facility site. Implementation of *Revised* Alternative 3 would include construction of drainage systems including debris basins, sediment basins, and culverts on the project site itself to protect onsite facilities and ensure that stormwater released downstream of the facility mimics pre-development conditions. The project would not include construction or modification of any stormwater systems either upgradient or downgradient of the facility. Therefore, *Revised* Alternative 3 would not have the potential to create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems and, therefore, no mitigation measures are required to address potential effects to existing or planned stormwater drainage systems.

Flood Hazard Areas

Similar to the discussion of drainage pattern and drainage system impacts, the impact of *Revised* Alternative 3 associated with flood hazard areas would be the same under construction, operations and maintenance, and decommissioning. This is because any potential impact would be associated with modification of stormwater flow pathways, volumes, or velocities, and these modifications would occur during initial stages of construction and be maintained throughout the operations and decommissioning periods. Therefore, this analysis is presented here under construction, but is not repeated for operations and decommissioning of *Revised* Alternative 3.

Revised Alternative 3 would be located in FEMA Zone D, which is classified as an area where flood hazards have not been mapped (FEMA 2008). Although a flood hazard analysis has not been conducted by FEMA for this area, the hydrologic study and modeling completed by the Applicant (Taney Engineering 2011a) for the Proposed Action is also applicable to *Revised* Alternative 3. This modeling included calculation of the potential for scour to destabilize structures constructed on the site.

The scour analysis was conducted for the 100 year flood scenario, and included an analysis of the project area without implementation of upstream debris basins, and then with implementation of upstream debris basins. The analysis demonstrated that, without stormwater management, scour depths of up to 4.1 feet could occur around the support posts of the solar arrays. This depth of scour would not be large enough to destabilize the arrays because of the depth of installation of the supports, and the fact that each array is supported by multiple posts. The scour calculation for the post-development condition, which would include debris basins to slow stormwater and release it as sheet flow across the solar array area, would be approximately 2 feet in depth. Again, this depth would not be high enough to destabilize site structures. The Applicant's Storm Water Management Plan includes provisions to inspect the site following storm events, and any scour of this magnitude would be found and corrected.

Water Quality

Surface Water

Construction of the facility under *Revised* Alternative 3 would include implementation of a Construction SWPPP, in compliance with mitigation measures MM-Water-8 and Section 402 of the CWA (see Section 3.19.2.1 of this *PA and* EIS/EIR), which specifies BMPs to minimize and/or avoid potential impacts associated with stormwater runoff. The SWPPP would incorporate standard BMPs to protect water quality and avoid adverse effects of project construction on surface water quality, including BMPs to prevent drainage pattern alterations to result in adverse effects to surface waters.

The potential for construction of *Revised* Alternative 3 to contribute sources of polluted runoff if an accidental leak or release of harmful materials were to occur during construction activities would be the same as evaluated for the Proposed Action. The Applicant has developed an Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, which includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and requirements for notices to federal and local emergency response authorities. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. The types and volumes of fuels and hazardous materials would be the same under *Revised* Alternative 3 as in the Proposed Action. In addition, the Applicant would site all fueling, hazardous materials storage areas, and operation and maintenance activities involving hazardous materials at least 100 feet away from blue-line drainages as identified on USGS topography maps. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, potential impacts associated with the creation of polluted runoff under *Revised* Alternative 3 would be minimized and/or avoided.

Groundwater

The management of hazardous materials and fuels during construction of *Revised* Alternative 3 would be the same as discussed above for surface water. The regulatory requirements, mitigation measures (specifically, MM-PH&S-2 and MM-Water-10), and management plans that would minimize the potential for release of contaminants to surface water would also be effective in minimizing the potential for their release to groundwater. Given the depth to groundwater at the site (approximately 200 feet), it is highly unlikely that any release of fuel or hazardous materials on the surface could reach groundwater. Any releases would likely be very small in volume, and would be identified and remediated before they could migrate the large distance to groundwater. Therefore, contamination of groundwater by the release of contaminants under *Revised* Alternative 3 is very unlikely.

The Applicant's proposed use of a temporary septic tank and leach field system for the construction office area could potentially have an adverse impact on soil, surface water, or groundwater quality. Mitigation measure MM-Water-12 would require that the Applicant use portable toilet facilities throughout the project site during construction.

The potential for mobilization of existing poor quality groundwater is the same for *Revised* Alternative 3 as it is for the Proposed Action. The groundwater withdrawal wells are in the same location, and the production rates would be the same. Based on the location of the primary production well in close proximity to the Dry Lake, and the withdrawal rate from that well during construction being comparable to the rates of the WP, PVGC, and Colosseum wells, it is likely that water production during construction could potentially result in mobilization of saline water from depth or from the Dry Lake. It is likely that this impact would occur if the peak construction production rate were to occur over the long-term, but it is less certain that the effect would occur within the relatively short duration of peak groundwater usage, which would be only one year during construction. This impact would be adverse, but would likely be temporary during and shortly following construction. Once pumping rates are reduced to minimal levels during operations, groundwater recharge from higher elevations on the alluvial fan would likely restore groundwater quality to original levels.

The Applicant's Groundwater Monitoring and Reporting Plan has been reviewed by the County, meets County requirements, and would be sufficient to evaluate potential water quality impacts associated with *Revised* Alternative 3. However, the Plan does not define a water quality criterion that would be used to identify impacts. Therefore, mitigation measure MM-Water-3 includes a requirement that the Applicant consult with the County and BLM to establish a baseline for the water quality criteria.

Implementation of the Groundwater Monitoring and Reporting Plan and the following mitigation measures would help to ensure that groundwater quality impacts do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse water quality impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration, which in turn would assist in providing freshwater to the aquifer. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. Mitigation Measure MM-Water-11, would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard.

Mudflow

Based on the setting of the proposed facility on flat ground near the Dry Lake bed, and several miles from the Clark Mountains, there is no potential for the facility to be impacted by mudflow, or to cause mudflow, during construction, operations, or decommissioning. Because there would be no impacts under any phase of the project, this analysis is presented here under construction, but is not repeated for operations and decommissioning of *Revised* Alternative 3.

Operation and Maintenance

Groundwater Supply and Recharge

The only water use associated with operations of *Revised* Alternative 3 would be the use of no more than 20 ac-ft/yr of water for sanitary purposes. No water would be used for cleaning solar panels during operations.

Basin-Wide Overdraft

The analysis of the availability of water within the IVGB is the same for *Revised* Alternative 3 as with the Proposed Action. A comparison of the groundwater recharge rate and potential basin pump rates was shown in Table 4.19-1, and that analysis concluded that the total water balance in the basin during construction would remain positive during construction of *Revised* Alternative 3, in the range of 530 to 1,845 ac-ft/yr. That analysis included an assumption of an extraction rate of 1,045 ac-ft/yr for the Stateline facility, which is the highest rate that would be anticipated during construction. During operations, that rate would drop to 20 ac-ft/yr. Therefore, the available water balance during operations would be much higher, in the range of 1,586 to 2,901 ac-ft/yr, and there would be no adverse impact.

Local Drawdown

The analysis of the effect of local drawdown presented for construction of *Revised* Alternative 3 is also applicable to operations. The modeling conducted by the Applicant included a construction period of 2 years and 4 years, followed by a 30-year operational period. The modeling included a scenario with 100 percent of production from the primary well, as well as a scenario assuming 100 percent of production from the secondary well.

The results of the Applicant's analysis indicate that groundwater level declines in the other nearby wells over the entire construction, operations, and decommissioning periods would be a maximum of 3.18 feet at well WP-5, *3.84* feet at WP-6, 0.74 feet at Ivanpah SEGS, 1.00 feet at Colosseum 1, and 0.63 feet at Colosseum 2 (West Yost *2013b*). As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), long-term declines in these wells have already ranged from 4 to 5 feet. In addition, the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria. In general, the water withdrawal rate of 20 ac-ft/yr during operations is minimal compared to rates of 860 ac-ft/yr for Primm, 1,800 ac-ft/yr for the Primm Valley Golf Course, and 100 ac-ft/yr for Ivanpah SEGS. Therefore, the additional decline resulting from operations of *Revised* Alternative 3 would be a minor impact.

The Applicant's Groundwater Monitoring and Reporting Plan (West Yost *2013b*) would also be applicable to the project operations under *Revised* Alternative 3. The following mitigation measures would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water*

quality if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project.

Water Quality

Surface Water

The potential for operations of *Revised* Alternative 3 to contribute sources of polluted runoff if an accidental leak or release of harmful materials were to occur would be the same as evaluated for the Proposed Action. The Applicant has developed an Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, which includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and requirements for notices to federal and local emergency response authorities. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. The types and volumes of fuels and hazardous materials would be the same under *Revised* Alternative 3 as in the Proposed Action. In addition, the Applicant would site all fueling, hazardous materials storage areas, and operation and maintenance activities involving hazardous materials at least 100 feet away from blue-line drainages as identified on USGS topography maps. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, potential impacts associated with the creation of polluted runoff would be minimized and/or avoided.

Groundwater

The management of hazardous materials and fuels during operations of *Revised* Alternative 3 would be the same as discussed above for surface water. The regulatory requirements, mitigation measures (specifically, MM-PH&S-2 and MM-Water-10), and management plans that would minimize the potential for release of contaminants to surface water would also be effective in minimizing the potential for their release to groundwater. An additional requirement during operations would be development and implementation of a SPCC Plan to manage the presence of oil-containing transformers. The SPCC Plan would identify hazardous materials managed onsite during operations, specify the use of appropriate spill containment and cleanup kits to contain accidental hazardous material releases, and specify inspection and response procedures and responsibilities. The Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, would ensure that hazardous materials and wastes would be handled in a safe and environmentally sound manner to prevent releases and in compliance with the requirements set forth in the applicable codes and regulations. Best management practices by the Applicant as presented in the SPCC Plan would ensure that the Applicant minimizes, avoids, or cleans up unforeseen spills of hazardous material. Given the depth to groundwater at the site (approximately 200 feet), it is highly unlikely that any release of fuel or hazardous materials on

the surface could reach groundwater. Any releases during operations of *Revised* Alternative 3 would likely be very small in volume, and would be identified and remediated before they could migrate the large distance to groundwater. Therefore, contamination of groundwater by the release of contaminants is very unlikely.

Mobilization of existing poor quality groundwater, as discussed for construction, would likely not be a concern during operations of *Revised* Alternative 3 due to the low volumes of water that would be produced from the new groundwater wells. Although the wells could be subject to increased salinity during construction, this effect would likely be temporary, and would dissipate when production levels are reduced to no more than 20 ac-ft/yr during operations.

The Applicant's Groundwater Monitoring and Reporting Plan would also be applicable during project operations of *Revised* Alternative 3. The following mitigation measures would help to ensure that groundwater quality impacts do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse water quality impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration, which in turn would assist in providing freshwater to the aquifer. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. Mitigation Measure MM-Water-11, would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard.

Decommissioning

Groundwater Supply and Recharge

The Applicant has not defined the amount of water that would be required for dust control during decommissioning of *Revised* Alternative 3. Given that decommissioning would require earth-moving activities across the same total acreage as construction, this evaluation assumes that decommissioning would require, at a maximum, the same volume of water as construction. The impacts of this water use, including water level declines in nearby wells and the potential to mobilize saline groundwater from the depth or from dry lake, would be the same as evaluated for construction of *Revised* Alternative 3. In addition, the mitigation measures required for construction would also apply to decommissioning. In practice, it is likely that water use during decommissioning would be much less than construction, because the duration would be shorter. The water would be obtained from the same two groundwater production wells that would supply water for construction and operations.

Basin-Wide Overdraft

The situation of the proposed production wells under decommissioning with respect to basin-wide overdraft concerns is the same as evaluated under construction. A comparison of the groundwater recharge rate and potential basin pump rates was shown in Table 4.19-1, and that analysis concluded that the total water balance in the basin during construction would remain positive during construction of *Revised* Alternative 3, in the range of 530 to 1,845 ac-ft/yr. That analysis included an assumption of an extraction rate of 1,045 ac-ft/yr for the Stateline facility, which is the highest rate that would be anticipated during construction. During

decommissioning, the rate could rise again to 1,045 ac-ft/yr, but for a much shorter duration than construction. Therefore, the available water balance during decommissioning would be in the range of 1,586 to 2,901 ac-ft/yr, and there would be no adverse impact.

Local Drawdown

The analysis of the effect of local drawdown presented for construction of *Revised* Alternative 3 is also applicable to decommissioning. The modeling conducted by the Applicant included a construction period of 2 years and 4 years, followed by a 30-year operational period. The modeling included a scenario with 100 percent of production from the primary well, as well as a scenario assuming 100 percent of production from the secondary well.

The results of the Applicant's analysis indicate that groundwater level declines in the other nearby wells over the entire construction, operations, and decommissioning periods would be a maximum of 3.18 feet at well WP-5, *3.84* feet at WP-6, 0.74 feet at Ivanpah SEGS, 1.00 feet at Colosseum 1, and 0.63 feet at Colosseum 2 (West Yost *2013b*). As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), long-term declines in these wells have already ranged from 4 to 5 feet. In addition, the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria. Also, the drawdown associated with decommissioning would be temporary, and would cease at the end of the decommissioning period. Therefore, the additional decline provided by the Stateline wells under *Revised* Alternative 3 would be a minor, temporary impact.

The Applicant's Groundwater Monitoring and Reporting Plan (West Yost *2013b*) would also be applicable to the project decommissioning under *Revised* Alternative 3. The following mitigation measures would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project.

Water Quality

Surface Water

Decommissioning of *Revised* Alternative 3 would include use of the same types and amounts of fuels and hazardous materials as construction, but for a shorter duration. The Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, would be applicable to project decommissioning. This Plan includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and requirements for notices to federal and local emergency response authorities. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. Once decommissioning is completed, remaining fuel and hazardous materials would be removed from the site, and any waste materials would be disposed offsite in accordance with regulatory requirements. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, potential impacts associated with the creation of polluted runoff under *Revised* Alternative 3 would be minimized and/or avoided.

Groundwater

The management of hazardous materials and fuels during decommissioning of *Revised* Alternative 3 would be the same as discussed above for surface water. The regulatory requirements, mitigation measures (specifically, MM-PH&S-2 and MM-Water-10), and management plans that would minimize the potential for release of contaminants to surface water would also be effective in minimizing the potential for their release to groundwater. The Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, would ensure that hazardous materials and wastes would be handled in a safe and environmentally sound manner to prevent releases and in compliance with the requirements set forth in the applicable codes and regulations. Given the depth to groundwater at the site (approximately 200 feet), it is highly unlikely that any release of fuel or hazardous materials on the surface could reach groundwater. Any releases during decommissioning of *Revised* Alternative 3 would likely be very small in volume, and would be identified and remediated before they could migrate the large distance to groundwater. Therefore, contamination of groundwater by the release of contaminants is very unlikely.

Mobilization of existing poor quality groundwater, as discussed for construction, *could also occur during decommissioning*. Although the wells could be subject to increased salinity during construction, this effect would likely be temporary, and would dissipate when production levels are reduced to no more than 20 ac-ft/yr during operations. During decommissioning, the rate could rise again to 1,045 ac-ft/yr, but for a much shorter duration than construction. *The effect would then dissipate again after decommissioning, when groundwater production ceases.*

The Applicant's Groundwater Monitoring and Reporting Plan would also be applicable during project decommissioning of *Revised* Alternative 3. The following mitigation measures would help to ensure that groundwater quality impacts do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse water quality impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration, which in turn would assist in providing freshwater to the aquifer. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. Mitigation Measure MM-Water-11, would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard.

Modify Boundary of Ivanpah DWMA

The action of modifying the boundary of the Ivanpah DWMA under *Revised* Alternative 3 would be the same as that for the Proposed Action. This action would not require construction of any

structures, use of water resources, or use of hazardous materials that could impact water quality. There would be no impacts to water resources associated with the modified DWMA boundary.

4.19.5.2 CEQA Significance Determinations

The CEQA significance determinations of water quality impacts for *Revised* Alternative 3 would be identical to Alternative 1.

4.19.6 Alternative 4: Reduced Acreage Alternative

4.19.6.1 Direct and Indirect Impacts

Alternative 4 is conceptually similar to the Proposed Action (Alternative 1), but would be placed within a different land area which comprises 1,766 acres. The land area associated with Alternative 4 would be the same as the northern portion of the bifurcated footprint of Alternative 2.

Construction

Under Alternative 4, the Stateline facility would be required to comply with all applicable water quality standards and waste discharge requirements, as presented in Section 3.19.2 of this *PA and* EIS/EIR. Mitigation measure MM-Water-1 (*Demonstrate Compliance with Water Quality Permits)* requires the Applicant to demonstrate compliance with all applicable permitting requirements prior to commencing construction, which will ensure that the proposed Stateline facility is in compliance with all applicable water quality permits and waste discharge requirements associated with construction, operation, and decommissioning activities.

Groundwater Supply and Recharge

The amount of water to be used under Alternative 4 would be reduced from that associated with the Proposed Action, due to the smaller land area. Based on a footprint 82 percent of the size of the Proposed Action footprint, approximately 1,550 ac-ft of water would be needed during the approximately 2 to 4 year construction period, with the majority of the construction water use occurring during the site preparation period of the first year. Water uses include soil compaction, dust control, and sanitary needs. The peak daily water *withdrawal* is estimated to be approximately 1.5 million gpd. Under Alternative 4, water supply would be provided by two new groundwater wells; the primary well to be located on the southeastern corner of the facility, and the secondary well located approximately 4,250 feet west of facility. In addition, three groundwater monitoring wells would be installed to evaluate potential impacts to groundwater availability and quality. The production wells would be 12 inches in diameter and 670 feet deep, with a screened interval located at a depth of 430 to 630 feet below ground surface. *The depths of the monitoring wells would be determined, on a site-specific basis, to ensure adequate monitoring of the elevation of the groundwater table.*

Basin-Wide Overdraft

The analysis of the availability of water within the IVGB is the same for Alternative 4 as with the Proposed Action. Although the overall volume of groundwater use would be reduced from the Proposed Action, it is assumed that the peak daily water demand would be approximately the

same, and would continue for at least one year. As shown in Table 4.19-1, the total water balance in the basin based on these assumptions is positive, in the range of 530 to 1,845 ac-ft/yr. Therefore, construction of Alternative 4 would not have any adverse impact associated with basin-wide overdraft issues.

Local Drawdown

The local drawdown associated with Alternative 4 would be reduced from that analyzed for the Proposed Action. The well locations for Alternative 4 would be the same as those evaluated for the Proposed Action. The most conservative of the analyses performed for the Proposed Action assumed use of 1,900 ac-ft of water through the 2 year construction period, followed by 30 years of production at a rate of 20 ac-ft/yr. In Alternative 4, the amount of water used during the 2 year construction period is estimated to be approximately 1,550 ac-ft, which would then be followed by the same production rate of 20 ac-ft/yr. The duration for the extraction of the peak daily water usage would be reduced, and therefore the amount of potential drawdown in other nearby wells would also be reduced. For the Proposed Action, this drawdown was estimated to be minor, and would not result in an adverse impact. Therefore, this same conclusion applies to Alternative 4.

The Applicant's Groundwater Monitoring and Reporting Plan would be applicable to the project under Alternative 4. The following mitigation measures would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration*, which in turn would assist in providing freshwater to the aquifer*. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project.

Surface Water and Drainage Patterns

The impact of Alternative 4 on surface water and drainage patterns would be the same under construction, operations and maintenance, and decommissioning. This is because any potential impact would be associated with vegetation removal, site grading, implementation of debris and sediment basins, and existence of infrastructure on the project site. Once vegetation removal, grading, and basin construction is completed during early phases of construction, potential impacts of the facility on stormwater flow would remain the same throughout the remainder of the construction period, and into the operations and decommissioning period. Therefore, this analysis is presented here under construction, but is not repeated for operations and decommissioning of Alternative 4.

Alternative 4 comprises the northern portion of the bifurcated site under Alternative 2. Therefore the hydrologic modeling and analysis of the Alternative 2 site layout was reviewed to evaluate potential impacts associated with Alternative 4.

The modeling effort for Alternative 2 identified eight drainage subbasins totaling more than 33,000 acres providing stormwater flow into the project area. Of the eight subbasins, only four of the subbasins (numbers 1 through 4) are applicable to the northern portion, which would

comprise Alternative 4. The resulting flow rate calculations for those four subbasins are shown in Table 4.19-5.

Table 4.19-5. Comparison of Existing and Post-Development Flow Rates, Alternative 4

Sub-Basin	Existing Flow Rates (cubic feet per second)				Post-Development Flow Rates (cubic feet per second)			
	1.2 yr	10 yr	25 yr	100 yr	1.2 yr	10 yr	25 yr	100 yr
1	530	2,927	4,009	6,624	541	2,950	4,033	6,638
2	548	3,134	4,301	7,215	557	3,160	4,329	7,233
3	280	1,602	2,213	3,742	285	1,615	2,226	3,751
4	326	1,884	2,597	4,381	329	1,891	2,605	4,386
Average Percentage Change in Flow Rate					**+1.65%**	**+0.70%**	**+0.55%**	**+0.20%**

The flow rates presented in Table 4.19.5 show that, on average, the development of Alternative 4 would increase flow rates in the subbasins by a maximum of about 1.7 percent. In general, the reason that the development would have such a limited effect on flow rates is because stormwater velocities would be deliberately slowed by the use of the debris and sediment basins. Based on these results, Alternative 4 would not be subjected to increased potential for flood damage, and would not modify erosion or sedimentation rates in downstream areas.

Maintaining these results depends on continued operation of the debris and sediment basins as they are designed to operate. Mitigation measure MM-Water-9 would require the Applicant to implement their Storm Water Management Plan (First Solar 2012k), which specifies how the debris and sediment basins would be designed, inspected, and maintained to ensure their continued operation. BLM has reviewed the design of the basins on the Applicant's site plans, the proposed methods for inspection and maintenance in the Storm Water Management Plan, and the methodologies and input parameters for the hydrologic modeling, and concludes that Alternative 4 would not be subjected to increased potential for flood damage, and would not modify erosion or sedimentation rates in downstream areas.

Stormwater Drainage Systems

Similar to the discussion of surface water and drainage pattern impacts, the impact of Alternative 4 on stormwater drainage systems would be the same under construction, operations and maintenance, and decommissioning. This is because any potential impact would be associated with modification of stormwater flow pathways, volumes, or velocities, and these modifications would occur during initial stages of construction and be maintained throughout the operations and decommissioning periods. Therefore, this analysis is presented here under construction, but is not repeated for operations and decommissioning of Alternative 4.

No designed stormwater drainage system currently exists in the area of the proposed Stateline facility site. Implementation of Alternative 4 would include construction of drainage systems including debris basins, sediment basins, and culverts on the project site itself to protect onsite facilities and ensure that stormwater released downstream of the facility mimics pre-development conditions. The project would not include construction or modification of any stormwater systems either upgradient or downgradient of the facility. Therefore, Alternative 4 would not have the potential to create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems and, therefore, no mitigation measures are required to address potential effects to existing or planned stormwater drainage systems.

Flood Hazard Areas

Similar to the discussion of drainage pattern and drainage system impacts, the impact of Alternative 4 associated with flood hazard areas would be the same under construction, operations and maintenance, and decommissioning. This is because any potential impact would be associated with modification of stormwater flow pathways, volumes, or velocities, and these modifications would occur during initial stages of construction and be maintained throughout the operations and decommissioning periods. Therefore, this analysis is presented here under construction, but is not repeated for operations and decommissioning of Alternative 4.

Alternative 4 would be located in FEMA Zone D, which is classified as an area where flood hazards have not been mapped (FEMA 2008). Although a flood hazard analysis has not been conducted by FEMA for this area, the hydrologic study and modeling completed by the Applicant (Taney Engineering 2011b) for Alternative 2 would be applicable to Alternative 4. This analysis included calculation of the potential for scour to destabilize structures constructed on the site.

The scour analysis was conducted for the 100 year flood scenario, and included an analysis of the project area without implementation of upstream debris basins, and then with implementation of upstream debris basins. The analysis demonstrated that, without stormwater management, scour depths of up to 4.4 feet could occur around the support posts of the solar arrays. This depth of scour would not be large enough to destabilize the arrays because of the depth of installation of the supports, and the fact that each array is supported by multiple posts. The scour calculation for the post-development condition, which would include debris basins to slow stormwater and release it as sheet flow across the solar array area, would be approximately 2.1 feet in depth. Again, this depth would not be high enough to destabilize site structures. The Applicant's Storm Water Management Plan includes provisions to inspect the site following storm events, and any scour of this magnitude would be found and corrected.

Water Quality

Surface Water

Construction of the facility under Alternative 4 would include implementation of a Construction SWPPP, in compliance with mitigation measures MM-Water-8 and Section 402 of the CWA (see Section 3.19.2.1 of this *PA and* EIS/EIR), which specifies BMPs to minimize and/or avoid potential impacts associated with stormwater runoff. The SWPPP would incorporate standard BMPs to protect water quality and avoid adverse effects of project construction on surface water quality, including BMPs to prevent drainage pattern alterations to result in adverse effects to surface waters.

The potential for construction of Alternative 4 to contribute sources of polluted runoff if an accidental leak or release of harmful materials were to occur during construction activities would be the same as evaluated for the Proposed Action. The Applicant has developed an Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, which includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and requirements for notices to federal and local emergency response authorities. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. The types and volumes of fuels and hazardous materials would be the same under Alternative 4 as in the Proposed Action, but they would be used for a shorter duration. In addition, the Applicant would site all fueling,

hazardous materials storage areas, and operation and maintenance activities involving hazardous materials at least 100 feet away from blue-line drainages as identified on USGS topography maps. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, potential impacts associated with the creation of polluted runoff under Alternative 4 would be minimized and/or avoided.

Groundwater

The management of hazardous materials and fuels during construction of Alternative 4 would be the same as discussed above for surface water. The regulatory requirements, mitigation measures (specifically, MM-PH&S-2 and MM-Water-10), and management plans that would minimize the potential for release of contaminants to surface water would also be effective in minimizing the potential for their release to groundwater. Given the depth to groundwater at the site (approximately 200 feet), it is highly unlikely that any release of fuel or hazardous materials on the surface could reach groundwater. Any releases would likely be very small in volume, and would be identified and remediated before they could migrate the large distance to groundwater. Therefore, contamination of groundwater by the release of contaminants under Alternative 4 is very unlikely.

The Applicant's proposed use of a temporary septic tank and leach field system for the construction office area could potentially have an adverse impact soil surface water, or groundwater quality. Mitigation measure MM-Water-12 would require that the Applicant use portable toilet facilities throughout the project site during construction.

Mobilization of existing poor quality groundwater is a potential concern for Alternative 4, as it is for the Proposed Action. The groundwater withdrawal wells are in the same location, and the maximum production rates would be the same. However, the duration of the peak withdrawal rate would be shorter under Alternative 4, and therefore the potential for mobilization of saline water would be lower under Alternative 4 than for the Proposed Action. Based on the location of the primary production well in close proximity to the Dry Lake, and the withdrawal rate from that well during construction being comparable to the rates of the WP, PVGC, and Colosseum wells, it is likely that water production during construction could potentially result in mobilization of saline water from depth or from the Dry Lake. It is likely that this impact would occur if the peak construction production rate were to occur over the long-term, but it is less certain that the effect would occur within the relatively short duration of peak groundwater usage, especially since the duration of this peak would be reduced under Alternative 4. The impact would be adverse, but would likely be temporary during and shortly following construction. Once pumping rates are reduced to minimal levels during operations, groundwater recharge from higher elevations on the alluvial fan would likely restore groundwater quality to original levels.

The Applicant's Groundwater Monitoring and Reporting Plan has been reviewed by the County, meets County requirements, and would be sufficient to evaluate potential water quality impacts associated with Alternative 4. However, the Plan does not define a water quality criterion that would be used to identify impacts. Therefore, mitigation measure MM-Water-3 includes a requirement that the Applicant consult with the County and BLM to establish a baseline for the water quality criteria.

Implementation of the Groundwater Monitoring and Reporting Plan and the following mitigation measures would help to ensure that groundwater quality impacts do not occur. Mitigation

measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse water quality impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration, which in turn would assist in providing freshwater to the aquifer. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. Mitigation Measure MM-Water-11, would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard.

Mudflow

Based on the setting of the proposed facility on flat ground near the Dry Lake bed, and several miles from the Clark Mountains, there is no potential for the facility to be impacted by mudflow, or to cause mudflow, during construction, operations, or decommissioning. Because there would be no impacts under any phase of the project, this analysis is presented here under construction, but is not repeated for operations and decommissioning of Alternative 4.

Operation and Maintenance

Groundwater Supply and Recharge

The only water use associated with operations of Alternative 4 would be the use of no more than 20 ac-ft/yr of water for sanitary purposes. No water would be used for cleaning solar panels during operations.

Basin-Wide Overdraft

The situation of the production wells under operations with respect to basin-wide overdraft concerns is the same as evaluated under construction of Alternative 4. A comparison of the groundwater recharge rate and potential basin pump rates was shown in Table 4.19-1, and that analysis concluded that the total water balance in the basin during construction is positive, in the range of 530 to 1,845 ac-ft/yr. That analysis included an assumption of an extraction rate of 1,045 ac-ft/yr for the Stateline facility, which is the highest rate that would be anticipated during construction. During operations of Alternative 4, that rate would drop to 20 ac-ft/yr. Therefore, the available water balance during operations of Alternative 4 would be much higher, in the range of 1,586 to 2,901 ac-ft/yr, and there would be no adverse impact.

Local Drawdown

The analysis of the effect of local drawdown presented for construction of Alternative 4 is also applicable to operations. The modeling conducted by the Applicant included a construction period of 2 years and 4 years, followed by a 30-year operational period. The modeling included a scenario with 100 percent of production from the primary well, as well as a scenario assuming 100 percent of production from the secondary well.

The results of the Applicant's analysis indicate that groundwater level declines in the other nearby wells over the entire construction, operations, and decommissioning periods would be a maximum of 3.18 feet at well WP-5, *3.84* feet at WP-6, 0.74 feet at Ivanpah SEGS, 1.00 feet at Colosseum 1, and 0.63 feet at Colosseum 2 (West Yost *2013b*). As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), long-term declines in these wells have already ranged from 4 to 5 feet. In addition, the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria. In general, the water withdrawal rate of 20 ac-ft/yr during operations is minimal compared to rates of 860 ac-ft/yr for Primm, 1,800 ac-ft/yr for the Primm Valley Golf Course, and 100 ac-ft/yr for Ivanpah SEGS. Therefore, the additional decline resulting from operations of Alternative 4 would be a minor impact.

The Applicant's Groundwater Monitoring and Reporting Plan (West Yost *2013b*) would also be applicable to the project operations under Alternative 4. The following mitigation measures would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project.

Water Quality

Surface Water

The potential for operations of Alternative 4 to contribute sources of polluted runoff if an accidental leak or release of harmful materials were to occur would be the same as evaluated for the Proposed Action. The Applicant has developed an Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, which includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and requirements for notices to federal and local emergency response authorities. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. The types and volumes of fuels and hazardous materials would be the same under Alternative 4 as in the Proposed Action. In addition, the Applicant would site all fueling, hazardous materials storage areas, and operation and maintenance activities involving hazardous materials at least 100 feet away from blue-line drainages as identified on USGS topography maps. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, potential impacts associated with the creation of polluted runoff would be minimized and/or avoided.

Groundwater

The management of hazardous materials and fuels during operations of Alternative 4 would be the same as discussed above for surface water. The regulatory requirements, mitigation measures (specifically, MM-PH&S-2 and MM-Water-10), and management plans that would minimize the potential for release of contaminants to surface water would also be effective in minimizing the potential for their release to groundwater. An additional requirement during operations would be development and implementation of a SPCC Plan to manage the presence of oil-containing transformers. The SPCC Plan would identify hazardous materials managed onsite during operations, specify the use of appropriate spill containment and cleanup kits to contain accidental hazardous material releases, and specify inspection and response procedures and responsibilities. The Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, would ensure that hazardous materials and wastes would be handled in a safe and environmentally sound manner to prevent releases and in compliance with the requirements set forth in the applicable codes and regulations. Best management practices by the Applicant as presented in the SPCC Plan would ensure that the Applicant minimizes, avoids, or cleans up unforeseen spills of hazardous material. Given the depth to groundwater at the site (approximately 200 feet), it is highly unlikely that any release of fuel or hazardous materials on the surface could reach groundwater. Any releases during operations of Alternative 4 would likely be very small in volume, and would be identified and remediated before they could migrate the large distance to groundwater. Therefore, contamination of groundwater by the release of contaminants is very unlikely.

Mobilization of existing poor quality groundwater, as discussed for construction, would likely not be a concern during operations of Alternative 4 due to the low volumes of water that would be produced from the new groundwater wells. Although the wells could be subject to increased salinity during construction, this effect would likely be temporary, and would dissipate when production levels are reduced to no more than 20 ac-ft/yr during operations.

The Applicant's Groundwater Monitoring and Reporting Plan would also be applicable during project operations of Alternative 4. The following mitigation measures would help to ensure that groundwater quality impacts do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse water quality impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration, which in turn would assist in providing freshwater to the aquifer. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project.

Decommissioning

Groundwater Supply and Recharge

The Applicant has not defined the amount of water that would be required for dust control during decommissioning of Alternative 4. Given that decommissioning would require earth-moving activities across the same total acreage as construction, this evaluation assumes that decommissioning would require, at a maximum, the same volume of water as construction. The impacts of this water use, including water level declines in nearby wells and the potential to mobilize saline groundwater from depth or from the dry lake, would be the same as evaluated

for construction of Alternative 4. In addition, the mitigation measures required for construction would also apply to decommissioning. In practice, it is likely that water use during decommissioning would be much less than construction, because the duration would be shorter. The water would be obtained from the same two groundwater production wells that would supply water for construction and operations.

Basin-Wide Overdraft

The situation of the proposed production wells under decommissioning with respect to basin-wide overdraft concerns is the same as evaluated under construction. A comparison of the groundwater recharge rate and potential basin pump rates was shown in Table 4.19-1, and that analysis concluded that the total water balance in the basin during construction is positive, in the range of 530 to 1,845 ac-ft/yr. That analysis included an assumption of an extraction rate of 1,045 ac-ft/yr for the Stateline facility, which is the highest rate that would be anticipated during construction. During decommissioning, the rate could rise again to 1,045 ac-ft/yr, but for a much shorter duration than construction. Therefore, the available water balance during decommissioning would be in the range of 1,586 to 2,901 ac-ft/yr, and there would be no adverse impact.

Local Drawdown

The analysis of the effect of local drawdown presented for construction of Alternative 4 is also applicable to decommissioning. The modeling conducted by the Applicant included a construction period of 2 years and 4 years, followed by a 30-year operational period. The modeling included a scenario with 100 percent of production from the primary well, as well as a scenario assuming 100 percent of production from the secondary well.

The results of the Applicant's analysis indicate that groundwater level declines in the other nearby wells over the entire construction, operations, and decommissioning periods would be a maximum of 3.18 feet at well WP-5, *3.84* feet at WP-6, 0.74 feet at Ivanpah SEGS, 1.00 feet at Colosseum 1, and 0.63 feet at Colosseum 2 (West Yost *2013b*). As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), long-term declines in these wells have already ranged from 4 to 5 feet. In addition, the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria. In general, the water withdrawal rate of 20 ac-ft/yr during operations is minimal compared to rates of 860 ac-ft/yr for Primm, 1,800 ac-ft/yr for the Primm Valley Golf Course, and 100 ac-ft/yr for Ivanpah SEGS. Therefore, the additional decline resulting from decommissioning of Alternative 4 would be a minor impact.

The Applicant's Groundwater Monitoring and Reporting Plan (West Yost *2013b*) would also be applicable to the project decommissioning under Alternative 4. The following mitigation measures would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-3 would require monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project.

Water Quality

Surface Water

Decommissioning of Alternative 4 would include use of the same types and amounts of fuels and hazardous materials as construction, but for a shorter duration. The Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, would be applicable to project decommissioning. This Plan includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and requirements for notices to federal and local emergency response authorities. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. Once decommissioning is completed, remaining fuel and hazardous materials would be removed from the site, and any waste materials would be disposed offsite in accordance with regulatory requirements. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, potential impacts associated with the creation of polluted runoff under Alternative 4 would be minimized and/or avoided.

Groundwater

The management of hazardous materials and fuels during decommissioning of Alternative 4 would be the same as discussed above for surface water. The regulatory requirements, mitigation measures (specifically, MM-PH&S-2 and MM-Water-10), and management plans that would minimize the potential for release of contaminants to surface water would also be effective in minimizing the potential for their release to groundwater. The Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, would ensure that hazardous materials and wastes would be handled in a safe and environmentally sound manner to prevent releases and in compliance with the requirements set forth in the applicable codes and regulations. Given the depth to groundwater at the site (approximately 200 feet), it is highly unlikely that any release of fuel or hazardous materials on the surface could reach groundwater. Any releases during decommissioning of Alternative 4 would likely be very small in volume, and would be identified and remediated before they could migrate the large distance to groundwater. Therefore, contamination of groundwater by the release of contaminants is very unlikely.

Mobilization of existing poor quality groundwater, as discussed for construction, *could also occur during decommissioning*. Although the wells could be subject to increased salinity during construction, this effect would likely be temporary, and would dissipate when production levels are reduced to no more than 20 ac-ft/yr during operations. During decommissioning, the rate could rise again to 1,045 ac-ft/yr, but for a much shorter duration than construction. *The effect would then dissipate again after decommissioning, when groundwater production ceases.*

The Applicant's Groundwater Monitoring and Reporting Plan would also be applicable during project decommissioning of Alternative 4. The following mitigation measures would help to ensure that groundwater quality impacts do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse water quality impacts. Measure MM-Water-3 would require

monitoring to ensure that no impacts occur, and *that are a more detailed further analysis of the actual material impact (unavailability of water, increased pumping costs, etc.) be conducted* if certain water level or water quality triggers are met. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration, which in turn would assist in providing freshwater to the aquifer. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. Mitigation Measure MM-Water-11 would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard.

Modify Boundary of Ivanpah DWMA

The action of modifying the boundary of the Ivanpah DWMA under Alternative 4 would be the same as that for the Proposed Action. This action would not require construction of any structures, use of water resources, or use of hazardous materials that could impact water quality. There would be no impacts to water resources associated with the modified DWMA boundary.

4.19.6.2 CEQA Significance Determinations

The CEQA significance determinations of recreation impacts for Alternative 4 would be identical to Alternative 1. Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

4.19.7 Alternative 5: No Action Alternative

4.19.7.1 Direct and Indirect Impacts

Under this alternative, the BLM would not approve the proposed solar facility and would not amend the CDCA Plan. As a result, no solar energy project would be constructed, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, none of the impacts on water resources from construction, operation, or decommissioning of the *Proposed Action* would occur.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under the No Action Alternative. Land uses associated with the Ivanpah DWMA would continue as they are today. The No Action Alternative would not have any adverse impact on water resources.

4.19.7.2 CEQA Significance Determinations

There would be no impacts to water resources under Alternative 5.

4.19.8 Alternative 6: No Project, Exclude Solar Alternative

4.19.8.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. As a result, no solar energy project would be constructed on the site, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. *As a result, none of the impacts on water resources from construction, operation, or decommissioning of the Proposed Action would occur.*

Modify Boundary of Ivanpah DWMA

The action of modifying the boundary of the Ivanpah DWMA under Alternative 6 would be the same as that for the Proposed Action. This action would not require construction of any structures, use of water resources, or use of hazardous materials that could impact water quality. There would be no impacts to water resources associated with the modified DWMA boundary.

4.19.8.2 CEQA Significance Determinations

There would be no impacts to water resources under Alternative 6.

4.19.9 Alternative 7: No Project, Approve Solar Alternative

4.19.9.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The Stateline Solar Farm Project would not be constructed on the project site and the project site would remain vacant in the near-term. *As a result, none of the impacts on water resources from construction, operation, or decommissioning of the Proposed Action would occur. While* it is possible that *some future* solar energy project could be constructed on the site *that has similar impacts to water resources as the Proposed Action, those impacts are speculative at this time*.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 7. Land uses associated with the Ivanpah DWMA would continue as they are today. *This alternative would not have any adverse impact on water resources.*

4.19.9.2 CEQA Significance Determinations

There would be no impacts to water resources under Alternative 7.

4.19.10 Cumulative Impacts

4.19.10.1 Geographic Extent/Context

The geographic extent of analysis for water resource impacts varies depending on the nature of the impact being evaluated, as follows:

Basin-wide Overdraft

The geographic extent for cumulative impact analysis associated with the Proposed Action and alternatives is the boundaries of the IVGB.

Local Drawdown

The geographic extent for cumulative impact analysis associated with the Proposed Action and alternatives is locations of nearby wells that could potentially be within the radius of influence of the new production wells installed for the Stateline project. For purposes of this analysis, this is assumed to include the Primm wells (WP-5 and WP-6), PVGC wells (PVGC-7, PVGC-8, PVGC-9, Colosseum 1, and Colosseum 2), and the Ivanpah SEGS well.

Stormwater Drainage Patterns

The geographic extent for cumulative impact analysis associated with the Proposed Action and alternatives is the extent of the subbasins in which project components are located. In general, this includes the subbasin outlines as they are delineated in the Applicant's hydrologic studies (*Figure 3 in* Taney Engineering 2011a; *Figure 3 in* Taney Engineering 2011b), as well as Ivanpah Dry Lake, which is the receiving basin. This extent includes areas both upgradient and downgradient of the facility.

Stormwater Systems

As discussed in the analysis of direct and indirect impacts, the Proposed Action and alternatives do not have any potential to impact stormwater systems, because no stormwater systems exist on the site or in downgradient areas. Therefore, no cumulative analysis is performed for impacts to stormwater systems.

Flood Hazards

The geographic extent for cumulative impact analysis is the same as that for stormwater drainage patterns.

Surface Water Quality

The geographic extent for cumulative impact analysis is the same as that for stormwater drainage patterns.

Groundwater Quality

The geographic extent for cumulative impact analysis associated with the Proposed Action and alternatives is the area in which groundwater impacts associated with the Proposed Action and alternatives could occur. For potential release of contaminants, this includes the downgradient area into which contaminants could migrate *(Ivanpah Dry Lake)*. For potential mobilization of poor quality groundwater, this includes the radius of influence of the new production wells installed for the Stateline project.

Mudflow

As discussed in the analysis of direct and indirect impacts, the Proposed Action and alternatives do not have any potential to be impacted by, or to cause, mudflows. Therefore, no cumulative analysis is performed for mudflows.

4.19.10.2 Existing Cumulative Conditions

This section discusses past and ongoing projects in the cumulative analysis areas described above. As the geographic area differs by type of impact, so the range of existing and ongoing projects also differs.

Basin-wide Overdraft

The existing projects that use groundwater within the IVGB are listed in Table 4.19-1, and include public water supply systems (Jean, Primm, Goodsprings, Nipton, and Desert), the Primm Valley Golf Course, Molycorp, and the Ivanpah SEGS and Silver State solar projects. The analysis presented in Table 4.19-1 acts as a summary of existing cumulative current conditions with respect to basin-wide overdraft. That table summarizes the overall water balance in the IVGB, including the rate of groundwater recharge, as well as the total of all groundwater uses in the basin.

As shown in this table, the total water balance in the basin, including construction of the proposed Stateline project, would remain in the range of 530 to 1,845 ac-ft/yr during construction of Alternatives 1 through 3. The existing condition can be obtained by subtracting the projected water use by the Stateline facility, resulting in a positive balance ranging from 1,606 to 2,921 ac-ft/yr. Given that the analysis used worst case pump rates, it is likely that the existing balance is much higher. This demonstrates that the existing cumulative condition of the basin is not in overdraft.

Local Drawdown

As discussed for the Proposed Action and alternatives, the Broadbent reports (Broadbent 2002; Broadbent 2009) document that local drawdown effects are known to occur in all of the wells in the local area. As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), although the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria, long-term declines in these wells have already ranged from 4 to 5 feet. Similar declines would be expected in the Primm wells.

Springs

The closest surface water to the site is in the form of springs located at the base of the Clark Mountains. The closest springs are Whiskey Spring (located 4.2 miles from the nearest groundwater withdrawal location, which is the secondary production well), Ivanpah Spring (4.6 miles away), and Willow Spring (4.9 miles away). The springs are located at elevations of more than 4,000 feet above sea level, and are caused by shallow groundwater being forced to the surface by impermeable bedrock. There is no reported information on impacts to these springs from the past projects in the region.

Stormwater Drainage Patterns

The existing projects in the upgradient area of the subbasins related to the Proposed Action and alternatives include Ivanpah SEGS, the Clark Mountain Grazing Allotment, transmission lines, and the Kern River natural gas transmission pipeline. Each of these projects is situated on the alluvial fan upgradient of the *Proposed Action*, and could therefore affect hydrologic conditions related to stormwater flow entering the facility from upstream. In general, none of these projects are expected to have substantially affected existing cumulative conditions with respect to stormwater drainage patterns.

Grazing activities are not expected to have affected stormwater drainage patterns in any way.

The Ivanpah SEGS development has been implemented using a low-impact development approach in which site grading was limited, and site drainages were generally left undeveloped. The hydrologic analyses conducted for the Ivanpah SEGS project concluded that stormwater conditions on the downgradient edge of the facility, including stormwater velocity and volumes and erosion and sedimentation characteristics, would not be affected by development of the project. Construction of that facility, and therefore any potential impact to stormwater patterns, has now been occurring since October, 2010, and there are no reports or observations of modification of stormwater drainage patterns on the proposed Stateline site. Therefore, the Ivanpah SEGS project has not had any identifiable impact on existing cumulative conditions related to stormwater drainage patterns.

The transmission lines have a very limited footprint that is not expected to affect stormwater pathways, and the Kern River pipeline is buried in the subsurface. Therefore, these developments are not expected to have any effect on stormwater drainage patterns.

The geographic area of cumulative analysis also includes areas downgradient of the *Proposed Action*. Due to the proximity of the facility to the Dry Lake, this includes only the Dry Lake itself, as well as infrastructure located on the Dry Lake (I-15 and the Calnev Pipeline). There is no available information regarding potential erosion or sedimentation impacts on the Dry Lake in the area of the *Proposed Action* that could have been caused by any existing projects.

Flood Hazards

The existing cumulative conditions with respect to flood hazards are similar to those for stormwater drainage patterns. Existing projects within the geographic area of analysis are the Clark Mountain Grazing Allotment, Ivanpah SEGS, the transmission lines, and the Kern River pipeline, each located upstream of the *Proposed Action*. The Proposed Action and all alternatives would be located in FEMA Zone D, which is classified as an area where flood hazards have not been mapped (FEMA 2008). However, none of the existing projects are known to have affected potential flood conditions on or downgradient of the proposed Stateline facility.

Surface Water Quality

The existing cumulative conditions with respect to surface water quality are similar to those for stormwater drainage patterns. Existing projects within the geographic area of analysis are the Clark Mountain Grazing Allotment, Ivanpah SEGS, the transmission lines, and the Kern River pipeline, each located upstream of the proposed Stateline facility. None of these is known to have affected surface water quality on or downgradient of the proposed Stateline facility through either releases of hazardous materials, or through modification of sedimentation and erosion characteristics.

Groundwater Quality

With respect to the potential release of contaminants to groundwater, the existing projects include any project that could potentially impact groundwater within the IVGB. Groundwater contamination related to Molycorp waste disposal activities is known to exist at the New Ivanpah Evaporation Pond (NIEP; located about 3 miles east of the proposed Stateline facility), the Old Ivanpah Evaporation Pond (OIEP; located about 9 miles to the southeast of the facility), and the Molycorp Mine and Millsite (located about 10 miles south of the facility). These areas of contamination are each currently under investigation and/or remediation under the oversight of the Lahontan RWQCB. None of these areas is known to have impacted, or have the potential to impact, groundwater uses in the IVGB.

Additional existing projects which have the potential to affect groundwater quality include the Calnev petroleum products pipeline, transport of hazardous materials and fuels along I-15 and the Union Pacific Railroad, storage of fuels at gasoline stations at Primm, and use of limited amounts of fuels and hazardous materials at the Primm Valley Golf Course and the Ivanpah SEGS, Silver State, and Walter Higgins Bighorn power plants. None of these potential sources are known to have had impacts to groundwater quality.

Mobilization of existing poor quality groundwater has been documented in the area of the Proposed Action. Existing projects that could create this effect include any project that involves groundwater withdrawal in close proximity to the Dry Lake, including the Primm resorts, the Primm Valley Golf Course, and Ivanpah SEGS in the northern part of Ivanpah Valley, and Molycorp in the southern part. Broadbent (2002) reports that TDS concentrations in the PVGC wells increased immediately after the wells were first pumped in 1995. By 1998, the golf course had procured the Colosseum wells to provide better water quality, and had substantially reduced pumping from the PVGC wells. Within two years, the TDS concentrations in PVGC-7 and PVGC-8 had dropped to original levels again, apparently due to recovery of the original groundwater gradient and inflow of fresher water from the recharge areas higher on the alluvial fan.

A similar trend was noted in the Primm wells WP-5 and WP-6. There appears to be a direct positive correlation between pumping rate and TDS concentrations in these wells, with TDS concentrations rising as pump rates increase. This would be consistent with withdrawal of water from depth or from the direction of the Dry Lake. However, TDS concentrations decrease again once pumping is reduced. This trend suggests that detrimental effects to groundwater quality as a result of withdrawal are not permanent (Broadbent 2002).

4.19.10.3 Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects; various BLM authorized actions/activities, proposed or approved projects within the County's jurisdiction, and other actions/activities that the agencies consider reasonably foreseeable. Table 4.1-2 summarizes the cumulative projects that would have the potential to combine with the Proposed Action and result in cumulative impacts to recreational resources. Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA, or will do so prior to approval. Even if environmental review has not been completed for the cumulative projects described in Table 4.1-2, their effects were considered in the cumulative impacts analysis in the *PA and* EIS/EIR.

Again, the reasonable foreseeable projects which are relevant to the analysis vary depending on the type of impact being evaluated, as follows:

Basin-wide Overdraft

The evaluation of basin-wide overdraft impacts in Table 4.19-1 included *current* projects *withdrawing* water from the IVGB*, as well as potential future use at the Silver State and Stateline projects*. The *pump rate* provided for the Silver State solar projects includes the expected volume to be used to support future construction of Phase 2 of the project. The *pump rate* provided for Molycorp represents both a past use and a future use, since these wells are currently not used, but are expected to be used by 2013. In addition, the *pump rate* provided for Molycorp also assumes that Molycorp provides water to support the Calnev Pipeline Expansion Project. No other reasonably foreseeable projects are expected to use groundwater from the basin.

Local Drawdown

No additional reasonably foreseeable projects are expected to use groundwater in the local area near the Primm and PVGC wells.

Springs

No other reasonably foreseeable projects are expected to use groundwater in the vicinity of the springs located at the base of the Clark Mountains.

Stormwater Drainage Patterns

Desert Xpress is the only reasonably foreseeable future project in the area which could impact stormwater drainage patterns.

Flood Hazards

*Desert Xpress is the only reasonably foreseeable future project in the area*which could impact flood hazards.

Surface Water Quality

The reasonably foreseeable future projects which could impact surface water quality in the area include Desert Xpress, JPOE, Molycorp Phoenix Project, Silver State Phase 2, Southern Nevada Supplemental Airport, and the Calnev Expansion Project. Most of these are construction projects which would use fuels and hazardous materials during construction, but would then have very limited activities associated with their operations. Molycorp, Southern Nevada Supplemental Airport, and the Calnev Expansion project would include long-term storage, transport, or management of large volumes of fuels, and therefore their operations could potentially impact surface water quality.

Groundwater Quality

The reasonably foreseeable future projects which could impact groundwater quality through the release of hazardous materials are the same as those that could affect surface water: Desert Xpress, JPOE, Molycorp Phoenix Project, Silver State Phase 2, Southern Nevada Supplemental Airport, and the Calnev Expansion Project. With respect to mobilization of poor

quality groundwater, there are no known future projects that are expected to involve groundwater withdrawal in the vicinity of the Dry Lake.

4.19.10.4 Cumulative Impact Analysis

Construction

Basin-wide Overdraft

The analysis presented in Table 4.19-1 acts as a summary of basin-wide overdraft with respect to all past, present, and reasonably foreseeable future projects, including inclusion of the construction phase of the *Proposed Action*. As shown in this table, the total water balance in the basin associated with all of these projects is positive, in the range of 530 to 1,845 ac-ft/yr. Given that the analysis used worst case pump rates, it is likely that the balance is much higher. Therefore, the cumulative effect of all projects would not create a basin-wide overdraft condition.

Local Drawdown

As discussed for the Proposed Action and alternatives, the Broadbent reports (Broadbent 2002; Broadbent 2009) document that local drawdown effects are known to occur in all of the wells in the local area. As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), although the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria, long-term declines in these wells have already ranged from 4 to 5 feet. Similar declines would be expected in the Primm wells. Inclusion of water withdrawal from the Proposed Action (the only reasonably foreseeable future project) would result in an additional drawdown ranging of a maximum of 3.18 feet at WP-5, *3.84* feet at WP-6, 0.74 feet at Ivanpah SEGS, 1.00 feet at Colosseum 1, and 0.63 feet at Colosseum 2 (West Yost *2013b*).

Cumulative local drawdown effects would be expected as a result of the existing projects, and the Proposed Action would contribute, incrementally, to that effect. However, the cumulative effect of the withdrawal from all wells would not exceed the County's significance criteria *for those types of effects*, and *therefore* the impact would therefore be less than significant.

The Applicant has developed a Groundwater Monitoring and Reporting Plan (West Yost *2013b*), which would monitor the impact, establish significance criteria for evaluating impacts, and proposes response actions *(such as reducing pumping rates or implementing water conservation measures)* to be implemented should the significance criteria be exceeded. Implementation of the plan would be required as part of mitigation measure MM-Water-3. The following mitigation measures would *also* help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration*, which in turn would assist in providing freshwater to the aquifer*. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. Similar measures are currently required for the Primm, Primm Valley Golf Course, and Ivanpah SEGS wells*, and would be expected to be required for the other reasonably foreseeable future projects*.

Springs

The closest surface water to the site is in the form of springs located at the base of the Clark Mountains. The closest springs are Whiskey Spring (located 4.2 miles from the nearest groundwater withdrawal location, which is the secondary production well), Ivanpah Spring (4.6 miles away), and Willow Spring (4.9 miles away). The springs are located at elevations of more than 4,000 feet above sea level, and are caused by shallow groundwater being forced to the surface by impermeable bedrock.

The groundwater modeling performed by the applicant incorporated pumping from all groundwater users in the basin, and therefore, acted as a cumulative analysis. The modeling showed that drawdown, even in wells located close to each other, was on the order of a few feet. Given this small amount of drawdown in local wells, the potential for a level of drawdown substantial enough to affect springs more than 4 miles away is minimal. Also, the amount of additional groundwater use added by the project during construction would be minimal compared to the total groundwater use, which has been occurring in this region for years. No impacts to these springs resulting from historical groundwater use has been reported, and therefore the added incremental use, which would occur only during construction, does not have the ability to affect the springs.

Stormwater Drainage Patterns

The contribution of the Proposed Action to cumulative impacts on surface water and drainage patterns would be the same under construction, operations and maintenance, and decommissioning. This is because any potential impact would be associated with vegetation removal, site grading, implementation of debris and sediment basins, and existence of infrastructure on the project site. Once vegetation removal, grading, and basin construction is completed during early phases of construction, potential contributions to cumulative impacts would remain the same throughout the remainder of the construction period, and into the operations and decommissioning period. Therefore, this analysis is presented here under construction, but is not repeated for the cumulative analysis for operations and decommissioning of the Proposed Action.

The Proposed Action and other existing and future projects would be located on an active alluvial fan system characterized by numerous ephemeral drainages that only flow during substantial precipitation events. Impacts associated with development on an alluvial fan system can include flash flood damage to unprotected site structures, increased soil erosion onsite and in downgradient areas due to increase in stormwater flow rates or concentration of flow, increased potential for flood damage to downgradient structures, and increased sedimentation in downgradient areas.

To address these potential impacts for the Proposed Action, the Applicant has conducted hydrologic modeling to predict stormwater flow conditions, designed the Proposed Action to incorporate protective features, and then included these protective features in additional modeling to verify that they would protect both the facility and the downgradient areas. The modeling conducted by the Applicant for the Proposed Action *(Taney Engineering 2011a)* also acts as an analysis of existing cumulative conditions because it incorporated assumptions and input parameters associated with existing projects located upgradient *from the Project site*.

That analysis indicated that, with implementation of the Applicant's Storm Water Management Plan, compliance with regulatory requirements, mitigation measures, and similar requirements for the Ivanpah SEGS project, there would be no adverse impacts to stormwater flow, erosion, or sedimentation characteristics *in the Project area*.

The only reasonably foreseeable future project which could affect stormwater drainage in the area is Desert Xpress. Construction of *this project* would involve vegetation clearing, site grading, and placement of infrastructure within stormwater flow pathways. Desert Xpress would include a new linear feature extending across active drainage channels on the alluvial fan upgradient of the proposed Stateline facility, and could therefore affect stormwater patterns and erosion and sedimentation characteristics *if it obstructed drainages or increased erosion rates*.

The Desert Xpress project would be required to operate in compliance with a Construction SWPPP, similar to the *Proposed Action*. In addition, it would be subject to mitigation measures required as part of project approval. The SWPPP and the mitigation measures would be designed to address stormwater so that no increase in stormwater flow, erosion, or sedimentation occurs in downgradient areas. In theory, failure to comply with these measures on Desert Xpress could affect stormwater flow conditions as they enter the *Proposed Action site*. Since the *Project's* hydrologic modeling was conducted, and the facility subsequently designed, based on certain assumptions regarding the nature of stormwater flow entering the site from upgradient, modification of these conditions by Desert Xpress could render the *Project's* modeling inapplicable, and could mean that the design of the Proposed Action would be inadequate to manage stormwater flows. This scenario is unlikely, as Desert Xpress would be subject to regulatory oversight and monitoring for compliance with mitigation measures.

Assuming that the future projects do not affect upgradient hydrology, the flow rates presented in Table 4.19.3 show that, on average, the development of the Proposed Action would increase flow rates in the subbasins by a maximum of about 2 percent. Based on these results, the cumulative projects would not result in subjecting any areas to increased potential for flood damage, and would not modify erosion or sedimentation rates in downstream areas.

Maintaining these results depends on continued operation of the debris and sediment basins as they are designed to operate. Mitigation measure MM-Water-9 would require the Applicant to implement their Storm Water Management Plan (First Solar 2012k), which specifies how the debris and sediment basins would be designed, inspected, and maintained to ensure their continued operation. BLM has reviewed the design of the basins on the Applicant's site plans, the proposed methods for inspection and maintenance in the Storm Water Management Plan, and the methodologies and input parameters for the hydrologic modeling, and concludes that the Proposed Action *along with other existing and reasonably foreseeable future actions* would not be subject *downstream areas* to increased potential for flood damage, *nor would they* modify erosion or sedimentation rates in downstream areas.

Flood Hazards

Similar to the discussion of cumulative surface water drainage pattern impacts, the contribution of the Proposed Action to cumulative impacts associated with flood hazard areas would be the same under construction, operations and maintenance, and decommissioning. This is because any potential impact would be associated with modification of stormwater flow pathways, volumes, or velocities, and these modifications would occur during initial stages of construction and be maintained throughout the operations and decommissioning periods. Therefore, this cumulative analysis is presented here under construction, but is not repeated for operations and decommissioning of the Proposed Action.

The cumulative analysis of flood hazards is similar to that for stormwater drainage patterns, because the analysis is based on modification of stormwater flow patterns. As discussed above, the modeling conducted by the Applicant for the Proposed Action also acts as an analysis of flood hazards for existing cumulative conditions because it incorporated assumptions and input parameters associated with existing projects located upgradient.

That analysis indicated that, with implementation of the Applicant's Storm Water Management Plan, compliance with regulatory requirements, mitigation measures, and similar requirements for the Ivanpah SEGS project, there would be no adverse impacts associated with flood hazards.

The only reasonably foreseeable future project which could affect flood hazards in the area is Desert Xpress. Construction of *this project* would involve vegetation clearing, site grading, and placement of infrastructure within stormwater flow pathways. Desert Xpress would include a new linear feature extending across active drainage channels on the alluvial fan upgradient of the *Proposed Action site*, and could therefore affect stormwater flow or erosion and sedimentation characteristics, and therefore create potential flood hazards to downgradient areas.

The Desert Xpress project would be required to operate in compliance with a Construction SWPPP, similar to the Stateline project. In addition, it would be subject to mitigation measures required as part of project approval. The SWPPP and the mitigation measures would be designed to address stormwater so that no increase in stormwater flow, erosion, or sedimentation occurs in downgradient areas. In theory, failure to comply with these measures on Desert Xpress could affect stormwater flow conditions as they enter the *Proposed Action site*. Since the *Project's* hydrologic modeling was conducted, and the facility subsequently designed, based on certain assumptions regarding the nature of stormwater flow entering the site from upgradient, modification of these conditions by Desert Xpress could render the *Project's* modeling inapplicable, and could mean that the design of the Proposed Action would be inadequate to protect the facility from flood hazards. This scenario is unlikely, as Desert Xpress would be subject to regulatory oversight and monitoring for compliance with mitigation measures.

The scour analysis was conducted for the 100 year flood scenario, and included an analysis of the project area without implementation of upstream debris basins, and then with implementation of upstream debris basins. The analysis demonstrated that, without stormwater management, scour depths of up to 4.1 feet could occur around the support posts of the solar arrays. This depth of scour would not be large enough to destabilize the arrays because of the depth of installation of the supports, and the fact that each array is supported by multiple posts. The scour calculation for the post-development condition, which would include debris basins to slow stormwater and release it as sheet flow across the solar array area, would be approximately 2 feet in depth. Again, this depth would not be high enough to destabilize site structures. Implementation of Desert Xpress, assuming that *this project is* in compliance with regulations and associated mitigation measures, would not change these conclusions. The Applicant's Storm Water Management Plan includes provisions to inspect the site following storm events, and any scour of this magnitude would be found and corrected.

Surface Water Quality – Hazardous Materials Releases

With respect to potential releases of hazardous materials or fuels, all projects in the Valley would use these items in some quantity. Existing potential sources of contaminants include the existing Calnev petroleum products pipeline, transport of hazardous materials and fuels along I-15 and the Union Pacific Railroad, storage of fuels at gasoline stations at Primm, and use of limited amounts of fuels and hazardous materials at the Primm Valley Golf Course and the Ivanpah SEGS, Silver State, and Walter Higgins Bighorn power plants. Future projects which would involve use of these materials include Desert Xpress, JPOE, Molycorp Phoenix Project, Silver State Phase 2, Southern Nevada Supplemental Airport, and the Calnev Expansion Project. Most of the future projects are construction projects which would use fuels and hazardous materials during construction, but would then have very limited activities associated

with their operations. However, Molycorp, Southern Nevada Supplemental Airport, and the existing and proposed Calnev Expansion project would include long-term storage, transport, or management of large volumes of fuels, and therefore their operations could potentially impact surface water quality. Currently, no sources impacting surface water quality through the release of hazardous materials are known.

Each of these projects could release hazardous materials or fuels, resulting in impacts to surface water quality. Cumulative impacts would only occur if multiple releases were to occur and not be addressed through remediation, which is unlikely. All of the projects that store more than 1,320 gallons of oil would be required to operate under a SPCC Plan, which would require features such as secondary containment, facility inspection, and response actions. In addition, most of these projects are subject to mitigation measures resulting from the project approval process. For the Proposed Action, the Applicant has developed an Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, which includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and requirements for notices to federal and local emergency response authorities. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. In particular, fuel storage (for construction vehicles and equipment) would be a temporary activity occurring only for as long as is needed to support construction activities. In addition, the Applicant would site all fueling, hazardous materials storage areas, and operation and maintenance activities involving hazardous materials at least 100 feet away from blue-line drainages as identified on USGS topography maps. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

Because they are subject to similar regulatory requirements and mitigation measures, none of the existing or *reasonably foreseeable* future projects are expected to create cumulative surface water quality impacts. With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, construction of the Proposed Action would not contribute to any cumulative impacts.

Surface Water Quality – Sedimentation and Erosion Characteristics

Similar to the discussion of cumulative surface water drainage pattern impacts, the contribution of the Proposed Action to cumulative impacts associated with sedimentation and erosion would be the same under construction, operations and maintenance, and decommissioning. This is because any potential impact would be associated with modification of stormwater flow pathways, volumes, or velocities, and these modifications would occur during initial stages of construction and be maintained throughout the operations and decommissioning periods. Therefore, this cumulative analysis is presented here under construction, but is not repeated for operations and decommissioning of the Proposed Action.

The cumulative analysis of surface water quality resulting from modification of sedimentation and erosion characteristics is similar to that for stormwater drainage patterns, because the analysis is based on modification of stormwater flow patterns. As discussed above, the modeling conducted by the Applicant for the Proposed Action also acts as an analysis of sedimentation and erosion characteristics for existing cumulative conditions because it incorporated assumptions and input parameters associated with existing projects located upgradient, including grazing, Kern River pipeline, transmission lines, and Ivanpah SEGS.

That analysis concluded that, with implementation of the Applicant's Storm Water Management Plan, compliance with regulatory requirements, mitigation measures, and similar requirements for the Ivanpah SEGS project, there would be no adverse impacts to surface water quality associated with modification of sedimentation or erosion characteristics *from the Proposed Action and existing cumulative projects*.

The only reasonably foreseeable future project which could affect sedimentation and erosion in the area is Desert Xpress. Construction of *this project* would involve vegetation clearing, site grading, and placement of infrastructure within stormwater flow pathways. Desert Xpress would include a new linear feature extending across active drainage channels on the alluvial fan upgradient of the proposed Stateline facility, and could therefore affect sedimentation and erosion characteristics in downgradient areas.

The Desert Xpress project would be required to operate in compliance with a Construction SWPPP, similar to the Stateline project. In addition, the project would be subject to mitigation measures required as part of project approval. The SWPPP and the mitigation measures would be designed to address stormwater so that no increase in stormwater flow, erosion, or sedimentation occurs in downgradient areas. In theory, failure to comply with these measures on Desert Xpress could affect stormwater flow conditions as they enter the Stateline facility. Since the Stateline hydrologic modeling was conducted, and the facility subsequently designed, based on certain assumptions regarding the nature of stormwater flow entering the site from upgradient, modification of these conditions by Desert Xpress could render the Stateline modeling inapplicable, and could mean that the design of the Proposed Action would be inadequate to ensure that surface water quality impacts associated with sedimentation and erosion characteristics do not occur. This scenario is unlikely, as Desert Xpress would be subject to regulatory oversight and monitoring for compliance with mitigation measures.

Groundwater Quality – Hazardous Materials Releases

Groundwater quality impacts associated with releases of fuels or hazardous materials have been documented to have occurred in the IVGB. Groundwater contamination related to Molycorp waste disposal activities is known to exist at the New Ivanpah Evaporation Pond (NIEP; located about 3 miles east of the proposed Stateline facility), the Old Ivanpah Evaporation Pond (OIEP; located about 9 miles to the southeast of the facility), and the Molycorp Mine and Millsite (located about 10 miles south of the facility). These areas of contamination are each currently under investigation and/or remediation under the oversight of the Lahontan RWQCB. None of these areas is known to have impacted, or have the potential to impact, groundwater uses in the IVGB. In addition, each area is relatively limited in extent with respect to the overall lateral extent and storage capacity of the basin, and the cumulative effect has therefore not resulted in adverse to any groundwater users.

Additional existing projects which have the potential to affect groundwater quality include the Calnev petroleum products pipeline, transport of hazardous materials and fuels along I- 15 and the Union Pacific Railroad, storage of fuels at gasoline stations at Primm, and use of limited amounts of fuels and hazardous materials at the Primm Valley Golf Course and the Ivanpah SEGS, Silver State, and Walter Higgins Bighorn power plants. None of these potential sources are known to have had impacts to groundwater quality. Future projects which could impact groundwater quality through the release of hazardous materials are the same as those that could affect surface water: Desert Xpress, JPOE, Molycorp Phoenix Project, Silver State Phase 2, Southern Nevada Supplemental Airport, and the Calnev Expansion Project.

Each of these projects could potentially release hazardous materials or fuels, resulting in impacts to groundwater quality. Adverse cumulative impacts would only occur if multiple releases were to occur, would not be addressed through remediation, and the cumulative effect

would be so large with respect to the basin that it would result in impacts to groundwater users. This scenario is unlikely. All of the projects that store more than 1,320 gallons of oil would be required to operate under a SPCC Plan, which would require features such as secondary containment, facility inspection, and response actions. In addition, most of these projects are subject to mitigation measures resulting from the project approval process. For the Proposed Action, the Applicant has developed an Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, which includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and requirements for notices to federal and local emergency response authorities. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. In particular, fuel storage (for construction vehicles and equipment) would be a temporary activity occurring only for as long as is needed to support construction activities. In addition, the Applicant would site all fueling, hazardous materials storage areas, and operation and maintenance activities involving hazardous materials at least 100 feet away from blue-line drainages as identified on USGS topography maps. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

Because they are subject to similar regulatory requirements and mitigation measures, none of the existing or *reasonably foreseeable* future projects are expected to create cumulative groundwater quality impacts. With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, the Proposed Action would not contribute to any cumulative impacts.

Groundwater Quality – Mobilization of Poor Quality Groundwater

Cumulative impacts associated with mobilization of existing poor quality groundwater have been documented in the area of the Proposed Action. Broadbent (2002) reports that TDS concentrations in the PVGC wells increased immediately after the wells were first pumped in 1995. By 1998, the golf course had procured the Colosseum wells to provide better water quality, and had substantially reduced pumping from the PVGC wells. A similar trend was noted in the Primm wells WP-5 and WP-6. The addition of the Ivanpah SEGS well and the *Proposed Action* well in the same general area could potentially add to this effect.

The Applicant has developed a Groundwater Monitoring and Reporting Plan (West Yost *2013b*), which would monitor the impact, establish significance criteria for evaluating impacts, and propose response actions to be implemented should the significance criteria be exceeded. Implementation of the plan would be required as part of mitigation measure MM-Water-3. The following mitigation measures would help to ensure that migration of poor quality groundwater does not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. Similar measures are currently required for the Primm, Primm Valley Golf Course, and Ivanpah SEGS wells. Mitigation Measure MM-Water-11 would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard.

Although a cumulative impact could occur, and the Proposed Action could contribute to that impact, implementation of the Groundwater Monitoring and Reporting Plan, mitigation measures, and similar measures required for the other projects would ensure that groundwater quality and uses are not impacted. Any contribution of the Proposed Action to the cumulative impact is expected to be temporary, and would be reduced quickly once construction-pumping rates are reduced.

Operations and Maintenance

Basin-wide Overdraft

The analysis presented in Table 4.19-1 acts as a summary of basin-wide overdraft with respect to all past, present, and reasonably foreseeable future projects, including inclusion of the construction, operations, and decommissioning phases of the *Proposed Action*. As shown in this table, the total water balance in the basin associated with all of these projects would remain positive, in the range of 530 to 1,845 ac-ft/yr. That analysis included an assumption of an extraction rate of 1,045 ac-ft/yr for the Stateline facility, which is the highest rate that would be anticipated during construction. During operations, that rate would drop to 20 ac-ft/yr. Therefore, the available water balance during operations would be much higher, in the range of 1,586 to 2,901 ac-ft/yr, and the cumulative effect of all projects would not create an overdraft condition.

Local Drawdown

As discussed for the Proposed Action and alternatives, the Broadbent reports (Broadbent 2002; Broadbent 2009) document that local drawdown effects are known to occur in all of the wells in the local area. As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), although the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria, long-term declines in these wells have already ranged from 4 to 5 feet. Similar declines would be expected in the Primm wells. Inclusion of water withdrawal from operations of the Proposed Action (the only reasonably foreseeable future project) would result in an additional drawdown ranging of a maximum of 3.18 feet at WP-5, *3.84* feet at WP-6, 0.74 feet at Ivanpah SEGS, 1.00 feet at Colosseum 1, and 0.63 feet at Colosseum 2 (West Yost *2013b*).

Cumulative local drawdown effects would be expected as a result of the existing projects, and the Proposed Action would contribute, incrementally, to that effect. However, the cumulative effect of the withdrawal from all wells would not exceed the County significance criteria, and the impact would therefore be less than significant. Given the very low production rate of the Stateline well (20 ac-ft/yr) compared to the combined rates from the Primm, PVGC, and Ivanpah SEGS wells (up to 2,760 ac-ft/yr), the contribution of operations of the Proposed Action to the total drawdown is minimal.

The Applicant has developed a Groundwater Monitoring and Reporting Plan (West Yost *2013b*), which would monitor the impact, establish significance criteria for evaluating impacts, and propose response actions to be implemented should the significance criteria be exceeded. Implementation of the plan would be required as part of mitigation measure MM-Water-3. The following mitigation measures would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to

maximize groundwater infiltration*, which in turn would assist in providing freshwater to the aquifer*. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. Similar measures are currently required for the Primm, PVGC, and Ivanpah SEGS wells.

Springs

Since groundwater use rates would be minimal during operations, and no past impacts to the springs at the base of the Clark Mountains have been reported, there is no potential for project operations to contribute to a cumulative effect to the springs.

Surface Water Quality – Hazardous Materials Releases

The potential for the other existing and future projects in the area to create cumulative surface water quality impacts through the release of hazardous materials or fuels would be the same regardless of the construction, operations, or decommissioning phase of the Stateline facility. This potential for cumulative impacts from all other projects was evaluated in the discussion of construction above, and was found to be minimal.

The potential for the Proposed Action to contribute to such impacts would be lower under project operations than under project construction. In general, the volumes of fuels and hazardous materials to be used onsite during operations would be lower than during construction. In addition, there would be many fewer employees, vehicles, and vehicle trips, and therefore a lower risk of a release associated with these. Operations would include storage of 72,000 gallons of mineral oil in transformers, but this would be managed as required in the SPCC Plan.

For the Proposed Action, the Applicant has developed an Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, which includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and requirements for notices to federal and local emergency response authorities. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. In particular, fuel storage (for construction vehicles and equipment) would be a temporary activity occurring only for as long as is needed to support construction activities. In addition, the Applicant would site all fueling, hazardous materials storage areas, and operation and maintenance activities involving hazardous materials at least 100 feet away from blue-line drainages as identified on USGS topography maps. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

With similar regulatory requirements and mitigation measures, none of the existing or future projects are expected to create cumulative surface water quality impacts. With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, operation of the Proposed Action would not contribute to any cumulative impacts.

Groundwater Quality – Hazardous Materials Releases

As discussed for construction, groundwater quality impacts associated with releases of fuels or hazardous materials have been documented to have occurred in the IVGB. The potential for the other existing and future projects in the area to result in additional releases, and to add to these cumulative groundwater quality impacts, would be the same regardless of the construction, operations, or decommissioning phase of the Stateline facility. This potential for future releases, and therefore additional cumulative impacts, from all other projects was evaluated in the discussion of construction above, and was found to be minimal.

The potential for the Proposed Action to contribute to existing or future cumulative impacts would be lower under project operations than under project construction. In general, the volumes of fuels and hazardous materials to be used onsite during operations would be lower than during construction. In addition, there would be many fewer employees, vehicles, and vehicle trips, and therefore a lower risk of a release associated with these. Operations would include storage of 72,000 gallons of mineral oil in transformers, but this would be managed as required in the SPCC Plan.

For the Proposed Action, the Applicant has developed an Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, which includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and requirements for notices to federal and local emergency response authorities. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. In addition, the Applicant would site all fueling, hazardous materials storage areas, and operation and maintenance activities involving hazardous materials at least 100 feet away from blue-line drainages as identified on USGS topography maps. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

With similar regulatory requirements and mitigation measures, none of the existing or future projects are expected to create cumulative groundwater quality impacts. With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, operation of the Proposed Action would not contribute to any cumulative impacts.

Groundwater Quality – Mobilization of Poor Quality Groundwater

As discussed above for construction, cumulative impacts associated with mobilization of existing poor quality groundwater has been documented in the area of the Proposed Action. The addition of the Ivanpah SEGS well and the proposed Stateline well in the same general area could potentially add to this effect. However, given the very low production rate of the Stateline well (20 ac-ft/yr) compared to the combined rates from the Primm, PVGC, and Ivanpah SEGS wells (up to 2,760 ac-ft/yr), the contribution of operations of the Proposed Action to the impact is minimal.

The Applicant has developed a Groundwater Monitoring and Reporting Plan (West Yost *2013b*), which would monitor the impact, establish significance criteria for evaluating impacts, and propose response actions to be implemented should the significance criteria be exceeded. Implementation of the plan would be required as part of mitigation measure MM-Water-3. The following mitigation measures would help to ensure that migration of poor quality groundwater does not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a

Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. Similar measures are currently required for the Primm, PVGC, and Ivanpah SEGS wells. Mitigation Measure MM-Water-11 would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard.

Although a cumulative impact could occur, and the Proposed Action could contribute to that impact, implementation of the Groundwater Monitoring and Reporting Plan, mitigation measures, and similar measures required for the other projects would ensure that groundwater quality and uses are not impacted. Any contribution of the Proposed Action to the cumulative impact is expected to be temporary, and would be reduced quickly once construction-pumping rates are reduced.

Decommissioning

Basin-wide Overdraft

The analysis presented in Table 4.19-1 acts as a summary of basin-wide overdraft with respect to all past, present, and reasonably foreseeable future projects, including inclusion of the construction, operations, and decommissioning phases of the Stateline project. As shown in this table, the total water balance in the basin associated with all of these projects would remain positive, in the range of 530 to 1,845 ac-ft/yr. That analysis included an assumption of an extraction rate of 1,045 ac-ft/yr for the Stateline facility, which is the highest rate that would be anticipated during construction. During decommissioning, the rate could rise again to 1,045 ac-ft/yr, but for a much shorter duration than construction. Therefore, the available water balance during decommissioning would be in the range of 1,586 to 2,901 ac-ft/yr, and the cumulative effect of all projects would not create an overdraft condition.

Local Drawdown

As discussed for the Proposed Action and alternatives, the Broadbent reports (Broadbent 2002; Broadbent 2009) document that local drawdown effects are known to occur in all of the wells in the local area. As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), although the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria, long-term declines in these wells have already ranged from 4 to 5 feet. Similar declines would be expected in the Primm wells. Inclusion of water withdrawal from decommissioning of the Proposed Action (the only reasonably foreseeable future project) would result in an additional drawdown ranging of a maximum of 3.18 feet at WP-5, *3.84* feet at WP-6, 0.74 feet at Ivanpah SEGS, 1.00 feet at Colosseum 1, and 0.63 feet at Colosseum 2 (West Yost *2013b*).

Cumulative local drawdown effects would be expected as a result of the existing projects, and the Proposed Action would contribute, incrementally, to that effect. However, the cumulative effect of the withdrawal from all wells would not exceed the County significance criteria, and the impact would therefore be less than significant.

The Applicant has developed a Groundwater Monitoring and Reporting Plan (West Yost *2013b*), which would monitor the impact, establish significance criteria for evaluating impacts, and propose response actions to be implemented should the significance criteria be exceeded. Implementation of the plan would be required as part of mitigation measure MM-Water-3. The following mitigation measures would help to ensure that basin overdraft and offsite drawdown of

more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration*, which in turn would assist in providing freshwater to the aquifer*. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. Similar measures are currently required for the Primm, PVGC, and Ivanpah SEGS wells.

Surface Water Quality – Hazardous Materials Releases

The potential for the other existing and future projects in the area to create cumulative surface water quality impacts through the release of hazardous materials or fuels would be the same regardless of the construction, operations, or decommissioning phase of the Stateline facility. This potential for cumulative impacts from all other projects was evaluated in the discussion of construction above, and was found to be minimal.

The potential for the Proposed Action to contribute to such impacts would be lower under project decommissioning than under project construction or operation. In general, the volumes of fuels and hazardous materials to be used onsite during decommissioning would be lower than during construction. Also, decommissioning would include removal of 72,000 gallons of mineral oil contained in transformers.

For the Proposed Action, the Applicant has developed an Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, which includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and requirements for notices to federal and local emergency response authorities. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. In particular, fuel storage (for construction vehicles and equipment) would be a temporary activity occurring only for as long as is needed to support construction activities. In addition, the Applicant would site all fueling, hazardous materials storage areas, and operation and maintenance activities involving hazardous materials at least 100 feet away from blue-line drainages as identified on USGS topography maps. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

Because they are subject to similar regulatory requirements and mitigation measures, none of the existing or *reasonably foreseeable* future projects are expected to create cumulative surface water quality impacts. With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, decommissioning of the Proposed Action would not contribute to any cumulative impacts.

Groundwater Quality – Hazardous Materials Releases

As discussed for construction, groundwater quality impacts associated with releases of fuels or hazardous materials have been documented to have occurred in the IVGB. The potential for the other existing and future projects in the area to result in additional releases, and to add to these cumulative groundwater quality impacts, would be the same regardless of the

construction, operations, or decommissioning phase of the Stateline facility. This potential for future releases, and therefore additional cumulative impacts, from all other projects was evaluated in the discussion of construction above, and was found to be minimal.

The potential for the Proposed Action to contribute to existing or future cumulative impacts would be lower under project decommissioning than under project construction or operation. In general, the volumes of fuels and hazardous materials to be used onsite during decommissioning would be lower than during construction. Also, decommissioning would include removal of 72,000 gallons of mineral oil contained in transformers.

For the Proposed Action, the Applicant has developed an Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), as required by mitigation measure MM-PH&S-2, which includes identification of all hazardous materials that would be used, stored, or transported at the site; establishes inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials; and requirements for notices to federal and local emergency response authorities. Secondary containment would be provided for all on-site hazardous materials and waste storage, including fuel. In addition, the Applicant would site all fueling, hazardous materials storage areas, and operation and maintenance activities involving hazardous materials at least 100 feet away from blue-line drainages as identified on USGS topography maps. Similar protective measures, training, and reporting would be required as part of mitigation measure MM-Water-10.

With similar regulatory requirements and mitigation measures, none of the existing or future projects are expected to create cumulative groundwater quality impacts. With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, decommissioning of the Proposed Action would not contribute to any cumulative impacts.

Groundwater Quality – Mobilization of Poor Quality Groundwater

As discussed above for construction, cumulative impacts associated with mobilization of existing poor quality groundwater has been documented in the area of the Proposed Action. The addition of the Ivanpah SEGS well and the proposed Stateline well in the same general area could potentially add to this effect. However, given the low production rate and short duration of use of the Stateline well compared to the combined rates from the Primm, PVGC, and Ivanpah SEGS wells (up to 2,760 ac-ft/yr), the contribution of decommissioning of the Proposed Action to the impact is minimal.

The Applicant has developed a Groundwater Monitoring and Reporting Plan (West Yost *2013b*), which would monitor the impact, establish significance criteria for evaluating impacts, and propose response actions to be implemented should the significance criteria be exceeded. Implementation of the plan would be required as part of mitigation measure MM-Water-3. The following mitigation measures would help to ensure that migration of poor quality groundwater does not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. Similar measures are currently required for the Primm, PVGC, and Ivanpah SEGS wells. Mitigation Measure MM-Water-11 would require that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard.

Although a cumulative impact could occur, and the Proposed Action could contribute to that impact, implementation of the Groundwater Monitoring and Reporting Plan, mitigation measures, and similar measures required for the other projects would ensure that groundwater quality and uses are not impacted. Any contribution of the Proposed Action to the cumulative impact is expected to be temporary, and would be reduced quickly once *decommissioning* pumping rates are reduced.

Modify Boundary of Ivanpah DWMA

The action of modifying the boundary of the Ivanpah DWMA would not require construction of any structures, use of water resources, or use of hazardous materials that could impact water quality. There would be no impacts to water resources associated with the modified DWMA boundary, and therefore this action would not contribute to cumulative impacts.

4.19.10.5 CEQA Significance Determinations

WR-1

Surface Water Quality – Hazardous Materials Releases

With respect to potential releases of hazardous materials or fuels, all projects in the Valley would use these items in some quantity. Therefore, cumulative surface water quality impacts from hazardous materials usage could potentially occur. However, no such impacts have been identified to be currently occurring.

Each of the existing and future projects, including the proposed Stateline project, would be subject to regulatory requirements (such as SPCC Plans) and mitigation measures. Therefore, no adverse cumulative effects would be expected. With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, construction, operation, and decommissioning of the Stateline facility would not contribute any impacts that would be cumulatively considerable.

Surface Water Quality – Sedimentation and Erosion Characteristics

With respect to potential cumulative surface water quality impacts associated with modification of sedimentation and erosion characteristics, the construction, operation, and decommissioning of the proposed Stateline facility in the same drainage subbasins as the Kern River pipeline, transmission lines, EITP, Desert Xpress, and Ivanpah SEGS could potentially result in cumulative surface water quality impacts. However, no such impacts have been identified to be currently occurring.

Each of the existing and future projects, including the proposed Stateline project, would be subject to regulatory requirements (such as Construction SWPPPs) and mitigation measures. Therefore, no adverse cumulative effects would be expected. With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, construction, operation, and decommissioning of the Stateline facility would not contribute any impacts that would be cumulatively considerable.

Groundwater Quality – Hazardous Materials Releases

Groundwater quality impacts associated with releases of fuels or hazardous materials have been documented to have occurred in the IVGB. Groundwater contamination related to Molycorp waste disposal activities is known to exist at the NIEP (located about 3 miles east of the proposed Stateline facility), the OIEP (located about 9 miles to the southeast of the facility), and the Molycorp Mine and Millsite (located about 10 miles south of the facility). These areas of contamination are each currently under investigation and/or remediation under the oversight of the Lahontan RWQCB. None of these areas is known to have impacted, or have the potential to impact, groundwater uses in the IVGB. In addition, each area is relatively limited in extent with respect to the overall lateral extent and storage capacity of the basin, and the cumulative effect has therefore not resulted in adverse to any groundwater users.

Additional existing projects which have the potential to contribute to this cumulative effect include the Calnev petroleum products pipeline, transport of hazardous materials and fuels along I-15 and the Union Pacific Railroad, storage of fuels at gasoline stations at Primm, and use of limited amounts of fuels and hazardous materials at the Primm Valley Golf Course and the Ivanpah SEGS, Silver State, and Walter Higgins Bighorn power plants. None of these potential sources are known to have had impacts to groundwater quality. Future projects which could contribute to this cumulative groundwater quality effect are the same as those that could affect surface water: EITP, Desert Xpress, JPOE, Mountain Pass Lateral, Molycorp Phoenix Project, Silver State Phase 2, Southern Nevada Supplemental Airport, and the Calnev Expansion Project.

Each of the existing and future projects, including the proposed Stateline project, would be subject to regulatory requirements (such as SPCC Plans) and mitigation measures. Therefore, no additional contributions to the existing cumulative effects would be expected. With compliance with regulatory requirements and implementation of mitigation measures MM-PH&S-2 *(Emergency Response and Hazardous Materials Management Plan), MM-Water-8 (Construction SWPPP), and MM-Water-10 (Accidental Spill Control and Environmental Training)*, construction, operation, and decommissioning of the Stateline facility would not contribute any impacts that would be cumulatively considerable.

Groundwater Quality – Mobilization of Poor Quality Groundwater

Cumulative impacts associated with mobilization of existing poor quality groundwater have been documented in the area of the Proposed Action. Broadbent (2002) reports that TDS concentrations in the PVGC wells increased immediately after the wells were first pumped in 1995. By 1998, the golf course had procured the Colosseum wells to provide better water quality, and had substantially reduced pumping from the PVGC wells. A similar trend was noted in the Primm wells WP-5 and WP-6. The addition of the Ivanpah SEGS well and the proposed Stateline well in the same general area could potentially add to this effect.

The Applicant has developed a Groundwater Monitoring and Reporting Plan (West Yost *2013b*), which would monitor the impact, establish significance criteria for evaluating impacts, and propose response actions to be implemented should the significance criteria be exceeded. Implementation of the plan would be required as part of mitigation measure MM-Water-3. The following mitigation measures would help to ensure that migration of poor quality groundwater does not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. Similar measures are currently required for the Primm, PVGC, and Ivanpah SEGS wells. Mitigation Measure MM-Water-11 would require

that the Applicant obtain drinking water from offsite sources if the analytical results from the onsite wells indicate that the water does not meet EPA's drinking water standard.

Although a cumulative effect has occurred, and the Stateline project could contribute to that impact, implementation of the Groundwater Monitoring and Reporting Plan, mitigation measures, and similar measures required for the other projects would ensure that groundwater uses are not impacted. Any contribution of the Stateline project to the cumulative impact is expected to be temporary, and would be reduced quickly once construction-pumping rates are reduced. The additional incremental impact from the proposed Stateline project would not be cumulatively considerable.

WR-2

As discussed for direct and indirect impacts for construction, the total water balance in the basin would remain positive, in the range of 530 to 1,845 ac-ft/yr. Therefore, there is no current cumulative effect on groundwater availability within the overall IVGB, and water withdrawal under the proposed project would not be cumulatively considerable.

As discussed for direct and indirect impacts of the proposed Stateline facility, the Broadbent reports (Broadbent 2002; Broadbent 2009) document that local drawdown effects are known to occur in all of the wells in the local area. As shown in the annual report for the Primm Valley Golf Course (Broadbent 2012), although the water level in each of the Colosseum wells is more than 11 feet above the tentative County significance criteria, long-term declines in these wells have already ranged from 4 to 5 feet. Similar declines would be expected in the Primm wells. Inclusion of water withdrawal from the Stateline facility (the only reasonably foreseeable future project) would result in an additional drawdown ranging of a maximum of 3.18 feet at WP-5, *3.84* feet at WP-6, 0.74 feet at Ivanpah SEGS, 1.00 feet at Colosseum 1, and 0.63 feet at Colosseum 2 (West Yost *2013b*).

Therefore, cumulative local drawdown effects have occurred as a result of the existing projects, and the Stateline facility would contribute, incrementally, to that effect. That contribution would occur during construction, and would be a temporary effect. In general, the water withdrawal rate of 20 ac-ft/yr during operations is minimal compared to rates of 860 ac-ft/yr for Primm, 1,800 ac-ft/yr for the Primm Valley Golf Course, and 100 ac-ft/yr for Ivanpah SEGS. During decommissioning, the rate could rise again to 1,045 ac-ft/yr, but for a much shorter duration than construction. Application of the provisional significance criterion to be used to evaluate groundwater level impacts in the Applicant's Groundwater Monitoring and Reporting Plan, along with mitigation measures, would help to ensure that basin overdraft and offsite drawdown of more than 5 feet do not occur. Mitigation measure MM-Water-2 would require the Applicant to develop a Water Supply Contingency Plan that would *require use of the secondary well or treatment of water quality* if their proposed water withdrawal were found to be causing unacceptable adverse impacts. Measures MM-Water-4 and MM-Water-5 would seek to ensure that the development on the surface uses pervious groundcover and is otherwise designed to maximize groundwater infiltration*, which in turn would assist in providing freshwater to the aquifer*. Measure MM-Water-6 would require employee training on water conservation in order to reduce the volume of water use by the project. Therefore, the additional decline provided by the Stateline wells would be a minor impact, and would not be cumulatively considerable.

WR-3

The Proposed Action and other existing and future projects would be located on an active alluvial fan system characterized by numerous ephemeral drainages that only flow during substantial precipitation events. Impacts associated with development on an alluvial fan system

can include flash flood damage to unprotected site structures, increased soil erosion onsite and in downgradient areas due to increase in stormwater flow rates or concentration of flow, increased potential for flood damage to downgradient structures, and increased sedimentation in downgradient areas. Placement of multiple projects within the same drainage can result in cumulative impacts on hydrology.

The Applicant has conducted hydrologic modeling to predict stormwater flow conditions, designed the project to incorporate protective features, and then included these protective features in additional modeling to verify that they would protect both the facility and the downgradient areas. The modeling conducted by the Applicant acts as an analysis of existing cumulative conditions because it incorporates assumptions and input parameters associated with existing projects located upgradient, including the Kern River pipeline, transmission lines, the Clark Mountain Grazing Allotment, and Ivanpah SEGS. That analysis indicated that, with implementation of the Applicant's Storm Water Management Plan, compliance with regulatory requirements, mitigation measures, and similar requirements for the Ivanpah SEGS project, there would be no cumulative impact to stormwater flow, erosion, or sedimentation characteristics.

Future projects which could affect stormwater drainage in the area include EITP and Desert Xpress. Construction of both of these projects would involve vegetation clearing, site grading, and placement of infrastructure within stormwater flow pathways. Although the EITP would have a limited footprint following construction, Desert Xpress would include a new linear feature extending across active drainage channels on the alluvial fan upgradient of the proposed Stateline facility, and could therefore contribute to cumulative impacts associated with erosion and sedimentation characteristics.

All of these projects would be required to operate in compliance with a Construction SWPPP, similar to the Stateline project. In addition, each project would be subject to mitigation measures required as part of project approval. The SWPPP and the mitigation measures would be designed to address stormwater so that no increase in stormwater flow, erosion, or sedimentation occurs in downgradient areas, and, for Desert Xpress, that would include stormwater that would eventually enter the Stateline facility from upgradient. Assuming that the future projects do not affect upgradient hydrology, the flow rates presented in Table 4.19.3 show that, on average, the development of the Stateline facility would increase flow rates in the subbasins by a maximum of about 2 percent. Based on these results, the cumulative projects would not result in subjecting any areas to increased potential for flood damage, and would not modify erosion or sedimentation rates in downstream areas. Therefore, there would be no cumulative effect.

Maintaining these results depends on continued operation of the debris and sediment basins as they are designed to operate. Mitigation measure MM-Water-9 would require the Applicant to implement their Storm Water Management Plan (First Solar 2012k), which specifies how the debris and sediment basins would be designed, inspected, and maintained to ensure their continued operation. BLM has reviewed the design of the basins on the Applicant's site plans, the proposed methods for inspection and maintenance in the Storm Water Management Plan, and the methodologies and input parameters for the hydrologic modeling, and concludes that the Stateline facility would not be subjected to increased potential for flood damage, and would not modify erosion or sedimentation rates in downstream areas. Therefore, the contribution of the Stateline facility would not be cumulatively considerable.

WR-4

The cumulative analysis of flood hazards is similar to that for stormwater drainage patterns, because the analysis is based on modification of stormwater flow patterns. As discussed

above, the modeling conducted by the Applicant for the Stateline project also acts as an analysis of flood hazards for existing cumulative conditions because it incorporated assumptions and input parameters associated with existing projects located upgradient.

While the project would deliberately alter the existing drainage within the project area, the potential for this modification to cause onsite or offsite flooding was evaluated in the Applicant's modeling. Stormwater velocities were modeled to increase by a maximum of about 2 percent, which would not cause flooding onsite, or on any offsite areas. With implementation of the Applicant's Storm Water Management Plan, compliance with regulatory requirements, mitigation measures, and similar requirements for the Ivanpah SEGS project, there would be no cumulative effect associated with flood hazards, and the contribution of the Stateline facility would not be cumulatively considerable.

WR-5

No designed stormwater drainage system currently exists or is planned in the area of the proposed Stateline facility site. Therefore, there would be cumulative effect on the capacity of stormwater drainage systems.

WR-8

The Stateline facility and other cumulative projects would be located in FEMA Zone D, which is classified as an area where flood hazards have not been mapped (FEMA 2008). Although the site has not been designated as being within a 100-year floodplain, stormwater flow is known to occur in channels within the project area on a regular basis. Therefore, structures placed into these channels could potentially be subjected to flood damage, or could redirect flow to other areas. To evaluate the potential for flood damage, the hydrologic study and modeling completed by the Applicant (Taney Engineering 2011a) included calculation of the potential for scour to destabilize structures constructed on the site.

As discussed above, the modeling conducted by the Applicant for the Stateline facility also acts as an analysis of flood hazards for existing cumulative conditions because it incorporated assumptions and input parameters associated with existing projects located upgradient. The analysis indicated that, with implementation of the Applicant's Storm Water Management Plan, compliance with regulatory requirements, mitigation measures, and similar requirements for the Ivanpah SEGS project, there would be no cumulative effects associated with flood hazards. Any diversion of stormwater flow by site structures would be limited in extent. Diverted flow would likely be re-directed for a few feet around any site structures, and would be unlikely to leave the project area. If diverted flow did leave the project area, there are no nearby structures that could be impacted. Impacts from the Stateline facility would not be cumulatively considerable.

WR-10

Based on the setting of the proposed facility on flat ground near the Dry Lake bed, and several miles from the Clark Mountains, there is no potential for the facility to be impacted by mudflow, or to cause mudflow.

4.19.10.6 Alternatives

Alternative 2: 2,385 Ac Alternative

As discussed in the cumulative analysis of the Proposed Action, no adverse impacts from existing projects in the cumulative analysis area are known to have occurred with respect to stormwater drainage patterns, flood hazards, or surface water quality. Alternative 2 would not combine with any of the existing or future projects to create these impacts.

Existing projects in the cumulative analysis area are known to have caused adverse impacts with respect to local groundwater drawdown, groundwater quality through release of hazardous materials, and groundwater quality through mobilization of saline groundwater. Activities associated with Alternative 2 would not be expected to contribute to the areas where releases of hazardous materials have caused groundwater contamination. However, Alternative 2 activities could contribute to groundwater drawdown and mobilization of saline groundwater through groundwater use during construction. The potential for Alternative 2 to contribute to these impacts would be addressed by implementation of the Applicant's Storm Water Management Plan, regulatory requirements, and mitigation measures. Because groundwater use rates and locations under Alternative 2 are approximately the same as those for the Proposed Action, the potential contribution to cumulative impacts would be the same for both alternatives.

Revised **Alternative 3:** ***1,685*** **Ac Alternative**

As discussed in the cumulative analysis of the Proposed Action, no adverse impacts from existing projects in the cumulative analysis area are known to have occurred with respect to stormwater drainage patterns, flood hazards, or surface water quality. *Revised* Alternative 3 would not combine with any of the existing or future projects to create these impacts.

Existing projects in the cumulative analysis area are known to have caused adverse impacts with respect to local groundwater drawdown, groundwater quality through release of hazardous materials, and groundwater quality through mobilization of saline groundwater. Activities associated with *Revised* Alternative 3 would not be expected to contribute to the areas where releases of hazardous materials have caused groundwater contamination. However, *Revised* Alternative 3 activities could contribute to groundwater drawdown and mobilization of saline groundwater through groundwater use during construction. The potential for *Revised* Alternative 3 to contribute to these impacts would be addressed by implementation of the Applicant's Storm Water Management Plan, regulatory requirements, and mitigation measures. Because groundwater use rates and locations under *Revised* Alternative 3 are approximately the same as those for the Proposed Action, the potential contribution to cumulative impacts would be the same for both alternatives.

Alternative 4: Reduced Acreage Alternative

As discussed in the cumulative analysis of the Proposed Action, no adverse impacts from existing projects in the cumulative analysis area are known to have occurred with respect to stormwater drainage patterns, flood hazards, or surface water quality. Alternative 4 would not combine with any of the existing or future projects to create these impacts.

Existing projects in the cumulative analysis area are known to have caused adverse impacts with respect to local groundwater drawdown, groundwater quality through release of hazardous materials, and groundwater quality through mobilization of saline groundwater. Activities associated with Alternative 4 would not be expected to contribute to the areas where releases of hazardous materials have caused groundwater contamination. However, Alternative 4

activities could contribute to groundwater drawdown and mobilization of saline groundwater through groundwater use during construction. The potential for Alternative 4 to contribute to these impacts would be addressed by implementation of the Applicant's Storm Water Management Plan, regulatory requirements, and mitigation measures. Because groundwater use locations and the peak groundwater usage rates under Alternative 4 are approximately the same as those for the Proposed Action, the potential contribution to cumulative impacts would be the same for both alternatives.

Alternative 5: No Action Alternative

Alternative 5, the No Action Alternative, would not contribute to any adverse cumulative impacts to water resources.

Alternative 6: No Project, Exclude Solar Alternative

Under Alternative 6, the Proposed Action would not be approved and the CDCA Plan would be amended to find the site unsuitable for solar energy development. As a result, Alternative 6, the No Project, Exclude Solar Alternative, would not contribute to any adverse cumulative impacts to water resources.

Alternative 7: No Project, Approve Solar Alternative

Under Alternative 7, the Proposed Action would not be approved and the CDCA Plan would be amended to find the site unsuitable for solar energy development. As a result, Alternative 7, the No Project, Approve Solar Alternative, would not contribute to any adverse cumulative impacts to water resources.

4.19.11 Mitigation Measures

MM-Water-1: Demonstrate compliance with water quality permits. Prior to construction, the Applicant shall submit satisfactory evidence to the BLM and San Bernardino County that all of the agencies listed below have been contacted and whether or not each agency requires a permit associated with the Stateline facility. Permits may include, but are not limited to, well construction permits from San Bernardino County, a Streambed Alteration Agreement from the CDFW, a Clean Water Act Section 402 National Pollutant Discharge Elimination System (NPDES) General Permit for stormwater discharges associated with construction activities, including a Stormwater Pollution Prevention Plan (SWPPP) with Best Management Practices (BMPs) for stormwater management, and a Clean Water Act Section 401 certification from the Lahontan Regional Water Quality Control Board (RWQCB).

Where a permit is required, the Applicant shall provide a copy of all the conditions required by that agency to BLM and the County. The BLM and the County, as applicable, shall review these conditions for consistency with proposed plans. During construction, the Environmental Monitor shall be aware of these other agency conditions and, if non-compliance is observed, shall contact the affected agency. For post-construction measures, the Environmental Monitor shall notify the affected agency should non-compliance be observed. The Applicant shall maintain and make available on site at all times an approved copy of all required permits.

MM-Water-2: Develop a Water Supply Contingency Plan for Construction. Prior to construction, the Applicant shall coordinate groundwater withdrawal plans with the Lahontan RWQCB. No groundwater resources from overdrafted basins shall be used to meet project needs. The Applicant shall implement their proposal for two supply wells, a primary supply well and a secondary supply well. The Water Supply Contingency Plan shall identify the well sites, proximity to other active wells, estimated total depth, well screen depth, diameter, estimated yield and water quality, and time required to have the wells drilled, constructed, developed and fully operational (if the wells are to be drilled specifically for the project, as opposed to use of existing wells).

If the water quality or yield of the primary supply well is inadequate or becomes inadequate to meet the project requirements, the secondary supply well shall be used in order to produce water of appropriate quality. Use of a secondary supply well would not alter the quantity of groundwater pumped for project purposes; the purpose of the secondary supply well would be to avoid potential impacts associated with withdrawals from the primary supply well.

The Water Supply Contingency Plan shall specify when the secondary supply well shall be used, what conditions would trigger necessary use of the secondary supply well, the person responsible for determining when to utilize the secondary supply well, and how such use shall be reported. The Environmental Monitor shall verify that the secondary supply well is installed and is capable of producing daily yields sufficient to supplement or replace the primary supply well in meeting construction water demand, as needed.

If needed to generate water of sufficient quality, water treatment using a mobile, self-contained ion exchange or reverse osmosis unit will be implemented. Water use volumes evaluated in this document apply to groundwater withdrawal rates, not actual final water use rates. Therefore, withdrawal of higher water volumes *of groundwater to meet the same water usage rate* shall not be permitted. Wastestreams from the treatment units shall be disposed of offsite in accordance with federal, state, and local regulations. Wastes shall not be disposed in the Primm wastewater infiltration ponds, or in any other location that returns the waste material to groundwater within the Ivanpah Valley Groundwater Basin.

MM-Water-3: *Amend and Implement* Groundwater Monitoring and Reporting Plan. The Applicant shall amend and implement their Groundwater Monitoring and Reporting Plan (West Yost *2013b*) prior to the onset of construction. The Applicant shall propose a water quality standard, or methodology for developing a standard, to be used as an indicator of potential adverse groundwater quality impacts. This standard shall include the baseline numerical total dissolved solids concentration and/or electrical conductivity value from which deviation will be measured, as well as which wells will be used for such measurements. This standard shall be proposed to the County and BLM for review and approval.

The Groundwater Monitoring and Reporting Plan shall provide detailed methodology for monitoring background and site groundwater levels, water quality, and flow. Monitoring shall be performed during pre-construction, construction, and project operation with the intent to establish pre-construction and project-related groundwater level and water quality trends that can be quantitatively compared against observed and simulated trends near the project pumping wells and near potentially impacted existing private wells. Water quality monitoring shall include annual sampling and testing for TDS, chloride, sodium, calcium, arsenic, and other anions and metals that could be mobilized from depth or from Ivanpah Dry Lake. Water quality samples shall be drawn from both project supply wells and the three monitoring wells.

During construction, quarterly water level and water quality monitoring data reports shall be submitted to the BLM and the County for review and approval. Reports shall include the pumping rates for both project wells. Based on the results of the quarterly water level trend

analyses, the Applicant shall determine if the project pumping has resulted, or will likely result if pumping continues, in water level decline of five feet or more below the projected baseline trend at nearby private wells. If drawdown of five feet or more occurs at off-site wells, and *a majority of this drawdown can be attributable to pumping of the Applicant's wells,* then the Applicant shall immediately reduce groundwater pumping until water levels stabilize or recover, sustaining drawdown of less than five feet.

The Plan shall include a schedule for submittal of quarterly monitoring data reports by the Applicant to the BLM and County. The BLM and County shall determine whether groundwater wells surrounding the project site and project supply well(s) are affected by project activities in a way that requires additional mitigation and, if so, shall determine what measures are needed.

MM-Water-4: Install pervious and/or high-roughness groundcover where applicable. Prior to the onset of construction, the Applicant shall submit a drainage design and hydrologic and hydraulic analysis to the BLM for review and approval and to San Bernardino County for review and comment. The Applicant shall also implement their Storm Water Management Plan (First Solar 2012k). In the design plans, groundcover for the onsite substation and O&M Building shall be comprised of a pervious and/or high-roughness material (for example, gravel) to the maximum extent feasible, in order to ensure maximum percolation of rainfall after construction. Debris/sediment basins shall be installed to reduce local increases in runoff, particularly on frequent runoff events (up to 10-year frequency). Downstream drainage discharge points shall be provided with erosion protection and designed such that flow hydraulics exiting the site mimic the natural condition as much as possible.

MM-Water-5: Design onsite drainage improvements to maximize groundwater recharge. Prior to onset of construction, the Applicant shall design onsite drainage improvements (and include on all applicable construction plans) to include the following components to maximize groundwater basin recharge: drainage from impervious surfaces (e.g., roads, driveways, buildings) shall be directed to a common drainage basin; the project shall design as few basins as possible for the entire development; and where feasible, mass grading and contouring shall be done in a way to direct surface runoff towards the above-referenced basins (and/or closed depressions).

MM-Water-6: Develop Master Drought Water Management and Water Conservation Education Programs. Prior to the onset of construction, a Master Drought Water Management Program shall be prepared by the Applicant and submitted to the BLM for approval. The Drought Water Management Program shall provide guidelines on how all future water use will be managed during "severe" drought year(s).

During construction and operation, these measures would go into effect during periods of "severe" drought. Once it is determined that a "severe" drought condition exists, restricted (drought) water usage measures shall remain in effect until it is shown satisfactorily to the BLM that the "severe" drought condition no longer exists. This plan shall include, but is not limited to the following measures:

- The definition of a "severe" drought year (as defined by the National Oceanic and Atmospheric Administration's (NOAA) Palmer Drought Severity method or other similarly recognized methodology);
- Identification of general measures available to reduce water usage for future development (to be refined as needed for each use approved);

- Identification of specific measures to be applied for landscape watering;
- Determination of appropriate early triggers to determine when "severe" drought conditions exist and process for initiating additional water conservation measures for [tract] and future development.

Along with the Drought Water Management Program and prior to the onset of construction, the Applicant shall develop and submit to the BLM for approval, a Master Water Conservation Education Program for all future operators and employees for use during drought periods. Such a program shall be developed by an appropriate expert for each onsite activity using water. Once the program is developed, the Applicant shall also include the means by which this information will be disseminated to any future operators of the project. The Drought Water Management Program and Water Conservation Education Program shall be implemented throughout the construction, operation, and decommissioning phases.

For any year that a "severe drought" state has been recognized, the Applicant shall submit a letter to the BLM by November 1 of that year identifying what measures were implemented to conserve water and to provide water conservation education, as well as the effectiveness of such measures.

MM-Water-7: Flood and Erosion Structure Damage Protection. Aboveground project features shall not be placed within waterway protection corridors (floodways) defined by city and county codes, and shall be located outside of known watercourses. Aboveground project features shall be designed and engineered to withstand potential flooding and erosion hazards. Although some project features may need to be placed within 100-year floodplain boundaries, or Flood Hazard Areas, they shall be designed per the County's Land Development Standards including Flood Control Standard Plats and Detention Basin Policy.

MM-Water-8: Construction SWPPP Specifications. A Construction SWPPP shall be developed for the Stateline facility. Notices of Intent (NOIs) shall be filed with the State Water Resources Control Board (SWRCB) and the Lahontan Regional Water Quality Control Board. A Waste Discharge Identification Number (WDID) shall be obtained prior to the issuance of construction permits. The SWPPP shall be stored at the construction site for reference by construction personnel and for inspection review. The SWPPP shall include BMPs that would be adhered to during construction in order to stabilize graded areas and waterways, and reduce erosion and sedimentation. Such BMPs may include but are not limited to those described below.

- Erosion minimizing efforts such as straw wattles, water bars, covers, silt fences, and sensitive area access restrictions (for example, flagging) that would be installed before clearing and grading begins. For protection of desert tortoise and other wildlife, silt fence shall only be installed on interior fences located within the exterior desert tortoise fence, so that tortoises will not be able to come in contact with the silt fence.
- Mulching, seeding, or other suitable stabilization measures would be used to protect exposed areas during construction activities.
- During construction activities, measures would be in place to ensure that contaminants are not discharged from the construction sites.
- Debris and sediment basins would be established, both upgradient and downgradient, as necessary, to capture silt and other materials, which might otherwise be carried from the site by rainwater surface runoff. The basins shall be designed in accordance with the

County Detention Basin Policy, which includes standards for sizing and armoring. This would require armoring on both the upgradient and downgradient (water release) sides of each basin.

- Straw wattles (or comparably effective devices [as determined by the onsite Civil Engineer, in consultation with the Environmental Monitor]) shall be placed on the downslope sides of the proposed work which would direct flows into temporary sedimentation basins.
- Stormwater protection berms positioned in the area of facility structures (substation and O&M Building).
- The SWPPP shall include a Sedimentation and Erosion Control Plan to minimize the potential for project sediment to leave the site and result in downstream sedimentation.
- All erosion control materials shall be biodegradable and natural fiber.

All be BMPs required by the SWPPP shall be checked and maintained regularly and after all larger storm events. All remedial work shall be done immediately after discovery so sedimentation control devices remain in good working order during the entire construction phase. Proper implementation will be verified by the Environmental Monitor.

MM-Water-9: Storm Water Management Plan. The project owner shall implement the requirements of their Storm Water Management Plan (First Solar 2012k) to operate and monitor to effectiveness of their proposed stormwater management system.

The Storm Water Management Plan shall be submitted to both the BLM and the County for review and approval, and shall include a plan to monitor and inspect periodically, before first seasonal and after every storm event*. The plan shall include the following elements*:

- Security and Tortoise Exclusion Fence: Inspect for damage and buildup of sediment or debris.
- Facility structures within drainages or subject to drainage overflow: Inspect for tilting, damage, depth of scour compared to depth below ground.
- Drainage Channels: Inspect for substantial migration or changes in depth, and transport of trash, debris, or broken PV module components.
- Stormwater protection features, including protection berms, culverts, and cement road crossings.
- Constructed Debris and Sediment Basins: Inspect for scour and structural integrity issues caused by erosion, and for sediment and debris buildup.
- Ivanpah Playa Surface: Inspect for changes in the surface texture and quality from sediment buildup, erosion, or transported debris.

Short-Term Incident-Based Response:

- Security and Tortoise Exclusion Fence: Repair damage, and remove built-up of sediment and debris.
- Facility structures: Remove broken materials, damaged structure, and wiring from the ground, and replace with materials meeting original construction specifications.
- Drainage Channels: No short-term response necessary unless changes indicate risk to facility structures.

- Constructed Debris and Sediment Basins: Repair damage, maintain erosion control measures and remove built-up sediment and debris.
- Ivanpah Playa Surface: Remove transported debris, notify BLM to develop plan for addressing sedimentation or erosion issues.

Long-Term Design-Based Response:

- Propose operation/BMP modifications to address ongoing issues. Include proposed changes to monitoring and response procedures, frequency, or standards.
- Propose design modifications to address ongoing issues. This may include construction of additional active storm water management diversion channels and/or detention ponds.
- Inspection, short-term incident response, and long-term design-based response may include activities both inside and outside of the approved right-of-way. For activities outside of the approved right-of-way, the Applicant will notify BLM and acquire environmental review and approval before field activities begin.

At least sixty (60) days prior to commercial operation, the project owner shall submit to the BLM and the County a copy of the Storm Water Management Plan for review and approval prior to commercial operation. The Applicant shall retain a copy of this plan onsite at the power plant at all times.

MM-Water-10: Accidental spill control and environmental training. Prior to the onset of construction of the Stateline facility, the following specifications must be provided by the Applicant to the BLM: define areas where hazardous materials would be stored, where trash would be placed, where rolling equipment would be parked, fueled and serviced, and where construction materials such as reinforcing bars and structural steel members would be stored. The Applicant shall also prescribe hazardous materials handling procedures for reducing the potential for a spill during construction, and shall include an emergency response program to ensure quick and safe cleanup of accidental spills. These specifications may be included in the project's SWPPP, or may be included as a separate plan.

Prior to and during construction, an environmental training program shall be established to communicate environmental concerns and appropriate work practices, including spill prevention and response measures, and SWPPP measures, to all field personnel. A monitoring program shall be implemented to ensure that the plans are followed during all construction, operations and maintenance, and decommissioning activities.

Storage of fuels and hazardous materials shall be prohibited within 200 feet of surface water features and private groundwater supply wells, and within 400 feet of community or municipal groundwater supply wells (if it is determined that such wells exist on or in close proximity to the project site).

During construction/ground disturbing activities and operation, all vehicles and equipment, including all hydraulic hoses, shall be maintained in good working order so that they are free of any and all leaks that could escape the vehicle or contact the ground, and to ensure that any leaks or spills during maintenance or storage can be easily and properly removed.

Compliance will be verified by the Environmental Monitor and the local SWPPP authority at the time of construction.

MM-Water-11: Drinking Water Source. Upon receipt of initial analytical results from the on-site production well, the Applicant shall make a determination, with concurrence of BLM and the County, regarding whether water quality meets EPA's National Secondary Drinking Water Regulation for TDS of 500 mg/L. If the analytical results from the initial sample, or from any of the subsequent results from periodic monitoring events, indicates that the water does not meet this standard, *the water shall not be used for drinking water, and* the Applicant shall arrange for provision of drinking water from an offsite source, as opposed to the on-site wells.

MM-Water-12: Portable Toilet Use for Construction. The Applicant shall use temporary, portable toilet facilities throughout the project area (both office area and solar array fields) during construction. A temporary septic tank and leach field system will not be used.

4.19.12 Residual Impacts After Mitigation

Following implementation of mitigation measures provided in Section 4.19.12 and discussed throughout this section, all adverse impacts to water resources resulting from construction, operation and maintenance, or decommissioning of the *Proposed Action* would be avoided or substantially reduced to a level below significance. Mitigation measures MM-Water-1 through MM-Water-10 have been designed to address project-specific effects as related to water resources, and no *additional* adverse impacts to water resources would occur as a result of *implementation of* these mitigation measures. *As a result, there* would be no adverse unavoidable impacts to water resources.

4.20 Wild Horse and Burro

4.20.1 Methodology for Analysis

This section evaluates whether the Proposed Action and alternatives would comply with applicable laws and regulations pertaining to the protection and management of wild horses and burros. It also evaluates the scope of the potential impacts to wild horses and burros as a result of the Proposed Action and alternatives.

4.20.2 CEQA Significance Criteria

CEQA does not provide specific significance criteria for impacts to wild horses and burros. Consequently, no CEQA significance determinations have been made for the analysis of wild horse and burro impacts below.

4.20.3 Alternative 1: Proposed Action

4.20.3.1 Direct and Indirect Impacts

The proposed solar farm location is included within the Clark Mountain Herd Management Area (HMA), which has historically been managed to protect burro populations. No wild horses have been documented in the Clark Mountain HMA. Although burros are still known to be present in the area, the Appropriate Management Level (AML) for burros in this area of the HMA was reduced from 44 to 0 through the NEMO Plan Amendment in December, 2002 (BLM 2002). The decision to implement the zeroing out of the HMA was implemented by the BLM through burro removal in 2007. Some burros still remain within the HMA and the BLM expects to remove them in the future pursuant to a separate gather decision.

The Proposed Action would include the removal of vegetation and installation of fencing surrounding the entire 2,143 acre project area. Fencing is expected to keep burros outside of the facility location. This action would make the project area inaccessible for grazing of individual burros during construction, operations, and decommissioning. Although this would represent a direct, adverse impact on 2,143 acre of land area that is currently used for grazing by existing burro populations, the loss of marginal quality forage base associated with the project footprint should not impact burros as other areas within Clark Mountain Allotment provide more abundant and better quality forage for burros when in the Clark Mountain HMA. In addition, because the AML for burros in the HMA is zero, and BLM has been actively removing burros from the HMA, the impact of the Proposed Action on burros would not be considered to be adverse after the removal of the remaining burros.

Construction

Although all burros in the HMA are expected to be eventually removed, the remaining burros are still protected by the provisions of the Wild and Free-Roaming Horse and Burro Act of 1971. Construction of the proposed facility is expected to involve increased traffic use of the existing roads from the Yates Well Road exit on I-15 to the proposed facility location. Increased traffic levels could impact burros by causing vehicle strikes. Additionally, burros could be injured or killed by falling into trenches or stormwater management systems during construction of the facility.

These potential impacts to remaining burros would be avoided or reduced through mitigation measures developed for the protection of wildlife and other resources. Project personnel would be briefed regarding the potential presence of burros within the project area, as would be included in the Worker Environmental Awareness Program specified in mitigation measure MM-

Wild-3. Speed limits of 10 mph on unpaved roads and 25 mph on stabilized roads established for fugitive dust control during construction and operations in accordance with mitigation measures MM-Air-1 and MM-Air-3 are expected to be sufficient to reduce risk of injury or death to burros by vehicle strike. In order to protect burros against other construction-related injury, all project construction areas would be fenced to eliminate access by burros to any excavations developed during construction.

Operation and Maintenance

Because all operations-related activities would occur within the fenced area, impacts to burros are not expected. Operation and maintenance activities would involve traffic use of the existing roads from the Yates Well Road exit on I-15 to the proposed facility location. However, with an expected full-time employment level of seven staff, the potential for vehicle strikes would be low. These operations workers would also be subject to the environmental awareness training and vehicle speed limits associated with construction, which would further reduce the potential for adverse impacts. Additionally, the remaining burros are expected to be removed during the operations period for the project.

Decommissioning

Upon project closure and decommissioning, the land that comprises the project footprint would be rehabilitated to reestablish plant communities originally occurring on the site before the original grant was issued. Following the achievement of the objectives for rehabilitation, as outlined in the Decommissioning Plan (First Solar 2012d), the ROW grant would then be cancelled adding 2,143 acres of reclaimed land back to the land base of Clark Mountain HMA.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the existing Ivanpah DWMA would not result in any adverse impacts to burros. The expansion of the boundaries of the DWMA to encompass an additional *23,363* acres would remove that area from future development for renewable energy and other uses, thus reducing the potential for development activities that could cause vehicle strike or other impacts to the remaining burros. Overall, the modification of the DWMA boundary would constitute a beneficial impact to the remaining burros.

4.20.3.2 CEQA Significance Determinations

CEQA does not require significance determinations for impacts to wild horses and burros.

4.20.4 Alternative 2: 2,385 Ac Alternative

4.20.4.1 Direct and Indirect Impacts

Construction, operations, and decommissioning activities associated with Alternative 2 would be slightly greater than those of the Proposed Action due to the slightly increased acreage, and the duration of construction-generated traffic may be incrementally longer. The amount of acreage removed from the HMA by fencing would be 2,385 acres, as compared to 2,143 acres in the Proposed Action. Although some of this acreage would be in a different location (south of the Primm Valley Golf Course), this separate parcel of acreage is not expected to have any better

forage, and therefore would not be more or less likely to have burros than the site under Alternative 1.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be the same under Alternative 2 as Alternative 1.

4.20.4.2 CEQA Significance Determinations

CEQA does not require significance determinations for impacts to wild horses and burros.

4.20.5 *Revised* Alternative 3: *1,685* Ac Alternative

4.20.5.1 Direct and Indirect Impacts

Construction, operations, and decommissioning activities associated with *Revised* Alternative 3 would be *reduced as compared to* the Proposed Action. The amount of acreage removed from the HMA by fencing would be *1,685* acres, as compared to 2,143 acres in the Proposed Action. Overall, the types of potential impacts to remaining burros would be the same as those described for the Proposed Action.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be the same under *Revised* Alternative 3 as Alternative 1.

4.20.5.2 CEQA Significance Determinations

CEQA does not require significance determinations for impacts to wild horses and burros.

4.20.6 Alternative 4: Reduced Acreage Alternative

4.20.6.1 Direct and Indirect Impacts

Construction, operations, and decommissioning activities associated with Alternative 4 would be reduced as compared to the Proposed Action. The amount of acreage removed from the HMA by fencing would be 1,766 acres, as compared to 2,143 acres in the Proposed Action. Overall, the types of potential impacts to remaining burros would be the same as those described for the Proposed Action.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be the same under Alternative 4 as Alternative 1.

4.20.6.2 CEQA Significance Determinations

CEQA does not require significance determinations for impacts to wild horses and burros.

4.20.7 Alternative 5: No Action Alternative

4.20.7.1 Direct and Indirect Impacts

Under this alternative, the proposed facility would not be approved and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site, and there would be no potential impacts to burros through vehicle strikes or displacement from the 2,143 acre fenced area. BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. This includes implementation of the AML established for burros in this area through the NEMO Plan Amendment.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 5 and, therefore, the potential beneficial impacts to the remaining burros that would be associated with limiting land uses in that area would not occur. Land uses associated with the Ivanpah DWMA would continue as they are today. This action would not have any effect on the remaining burros.

4.20.7.2 CEQA Significance Determinations

CEQA does not require significance determinations for impacts to wild horses and burros.

4.20.8 Alternative 6: No Project, Exclude Solar Alternative

4.20.8.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. As a result, no solar energy project would be constructed on the project site, and there would be no potential impacts to burros through vehicle strikes or displacement from the 2,143 acre fenced area.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be the same under Alternative 6 as Alternative 1.

4.20.8.2 CEQA Significance Determinations

CEQA does not require significance determinations for impacts to wild horses and burros.

4.20.9 Alternative 7: No Project, Approve Solar Alternative

4.20.9.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The Stateline Solar Farm Project would not be constructed on the project site and the project site would remain vacant in the near-term. Under this alternative, the BLM would not approve the proposed facility, but would amend the CDCA Plan to allow for other solar projects on the site. As a

result, it is possible that another solar energy project could be constructed on the site, and it is likely that another solar project would have similar impacts to those of the Proposed Action.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 7. Land uses associated with the Ivanpah DWMA would continue as they are today. This action would not have any effect on the remaining burros.

4.20.9.2 CEQA Significance Determinations

CEQA does not require significance determinations for impacts to wild horses and burros.

4.20.10 Cumulative Impacts

4.20.10.1 Geographic Extent/Context

The cumulative impact analysis area for burros is their range within the Clark Mountain HMA boundary.

4.20.10.2 Existing Cumulative Conditions

Past and present projects occurring in the vicinity of the proposed facility include recreational activities; mining; solar development; utility corridors used for transmission of electric power, natural gas, petroleum products and communications; transportation infrastructure (highway and railroad, both existing and proposed); and grazing.

Regionally, impacts to burros in the CDCA planning area have been occurring for 100 years or more. Authorized and unauthorized vehicle use and maintenance and construction of utility rights-of-way can have a slight impact to burros by removal of vegetation utilized for forage, and there is always a danger of vehicles colliding with burros. The impact of the proposed and probable development projects (mineral production, solar projects, rail lines, and airports) would cumulatively remove and isolate potential grazing sites for burros.

4.20.10.3 Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects, various BLM authorized actions/activities, proposed or approved projects within the County's jurisdiction, and other actions/activities that the agencies consider reasonably foreseeable. Table 4.1-2 summarizes the cumulative projects that would have the potential to combine with the Proposed Action and result in cumulative impacts to recreational resources. Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA, or will do so prior to approval. Even if environmental review has not been completed for the cumulative projects described in Table 4.1-2, their effects were considered in the cumulative impacts analysis in the *PA and* EIS/EIR.

Projects currently under construction in the vicinity of the proposed facility include the Ivanpah SEGS solar facility (3,471 acres). Proposed projects in the vicinity of the proposed facility that would have potentially adverse impacts to wild horses and burros include the Southern Nevada

Supplemental Airport, Desert Xpress high speed passenger rail line, Silver State Phase 2 solar facility, and the Calnev Pipeline Expansion Project.

4.20.10.4 Cumulative Impacts Associated with Proposed Action

Construction

Although the AML for burros in this area of the HMA was reduced from 44 to 0 through the NEMO Plan Amendment, burros are known to still exist in the area, and could potentially be impacted by construction, operations and maintenance, and decommissioning of the Proposed Action, in combination with other projects in the region. The Proposed Action, as well as other projects, would be fenced, and therefore removed from the Clark Mountain HMA as potential range and forage for the remaining burros. This impact would occur as the project area becomes fenced during construction, and would continue through operations and decommissioning. However, because the AML in the area has been reduced to 0, this would not be considered an adverse cumulative impact to the HMA.

Construction of the Proposed Action would contribute, along with other projects, to the amount of traffic occurring on Yates Well Road and other open routes in the area. The increase in traffic could increase the risk of vehicle strike impacts to remaining burros*, although there is no information that such strikes have occurred in the past*. The potential for this impact would be reduced through mitigation measures that require worker awareness training and speed limits on the roads. Similar measures would likely be applied to other projects in the area, so there would be no cumulative impact to the remaining burros.

Operation and Maintenance

It is expected that all of the cumulative projects described above would be operational at the same time as the Proposed Action. As a result, there may be long-term impacts to burros during operation of those cumulative projects, resulting from the increase in traffic and increased potential for vehicle strikes. However, employment levels associated with operations of these cumulative projects would be expected to generate very few daily trips on Yates Well Road and the other open routes off of I-15. Therefore, the Proposed Action would not contribute to an adverse cumulative impact to the remaining burros. Additionally, those remaining burros are expected to be removed as the BLM works to achieve the AML established by the NEMO plan amendments for the HMA.

Decommissioning

The decommissioning of the Proposed Action is expected to result in impacts similar to those identified for construction. However, the Proposed Action's contribution to cumulative impacts to burros during decommissioning would be temporary. Following decommissioning, the land area associated with the Proposed Action would become available for burros, although it is expected that all burros would have been removed from the HMA by that time.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the existing Ivanpah DWMA would not contribute to any adverse cumulative impacts to burros. The expansion of the boundaries of the DWMA to encompass an additional *23,363* acres would remove that area from future development for renewable energy and other uses, thus reducing the potential for development activities that could cause vehicle

strike or other impacts to the remaining burros. Overall, the modification of the DWMA boundary would combine with the establishment of other areas designated for resource protection (such as Wilderness Areas and the Mojave National Preserve) to remove these areas from potential development, and therefore limit the potential for impacts to the remaining burros.

4.20.10.5 CEQA Significance Determinations

CEQA does not require significance determinations for impacts to wild horses and burros.

4.20.10.6 Alternatives

Alternative 2: 2,385 Ac Alternative

The impacts to burros associated with Alternative 2 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with Alternative 2 would be the same as those described above for the Proposed Action.

Revised Alternative 3: ***1,685*** Ac Alternative

The impacts to burros associated with *Revised* Alternative 3 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with *Revised* Alternative 3 would be the same as those described above for the Proposed Action.

Alternative 4: Reduced Acreage Alternative

The impacts to burros associated with Alternative 4 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with Alternative 4 would be the same as those described above for the Proposed Action.

Alternative 5: No Action Alternative

Alternative 5, the No Action Alternative, would not contribute to any of the potentially adverse impacts to burros as the action alternatives. There would be no potential impacts to burros through vehicle strikes or displacement from the 2,143 acre fenced area. However, this alternative would also not result in the beneficial impacts to the remaining burros that would be associated with the modification of the boundary of the Ivanpah DWMA.

Alternative 6: No Project, Exclude Solar Alternative

By denying the solar energy application, Alternative 6 would allow existing recreational land uses to continue on the project site as they are today. Therefore, this alternative would not contribute to impacts associated with the removal of the 2,143 acre Proposed Action footprint as rangeland and forage for burros, and would not contribute to increased vehicle traffic that could impact burros. In addition, by excluding the proposed facility area from future solar development, Alternative 6 would provide a beneficial contribution to the amount of land area available for burros.

Alternative 7: No Project, Approve Solar Alternative

By denying the solar energy application, Alternative 7 would allow existing land uses to continue on the project site as they are today. Therefore, this alternative would not contribute to impacts associated with the removal of the 2,143 acre Proposed Action footprint as rangeland and forage for burros, and would not contribute to increased vehicle traffic that could impact burros. Although this would be beneficial in not removing the land area from current range for the remaining burros, it could allow land uses, such as renewable energy development, that could impact burros in the future.

4.20.11 Mitigation Measures

Because the Proposed Action would not be expected to have adverse impacts on wild horses or burros, no mitigation measures specific to horses and burros have been developed. Potential impacts to remaining burros would be avoided or reduced through mitigation measures developed for the protection of wildlife and other resources. Project personnel would be briefed regarding the potential presence of burros within the project area, as would be included in the Worker Environmental Awareness Program specified in mitigation measure MM-Wild-3. Speed limits of 10 mph on unpaved roads and 25 mph on stabilized roads established for fugitive dust control during construction and operations in accordance with mitigation measures MM-Air-1 and MM-Air-3 are expected to be sufficient to reduce risk of injury or death to burros by vehicle strike. In order to protect burros against other construction-related injury, all project construction areas would be fenced to eliminate access by burros to any excavations developed during construction.

4.20.12 Residual Impacts After Mitigation

Because BLM has established the AML for burros in this area of the HMA at 0 through the NEMO Plan Amendment, there would be no residual impacts on burros as a result of the Proposed Action or alternatives.

4.21 Wildland Fire

4.21.1 Methodology for Analysis

The California Department of Forestry and Fire Protection (CAL FIRE) maps and datasets on statewide Fire Hazard Severity Zones (FHSZ) and site reconnaissance documenting vegetation conditions were all used to determine wildfire risk in the vicinity of the *Stateline Solar Farm Proposed Action* site. Published literature on fire behavior and indirect impacts on natural resources was reviewed to assess potential indirect impacts.

The direct effects of wildland fires include the loss of life and property. The indirect effects on natural resources that can result from an increase in the frequency and/or severity of wildfires are described here, and are common to all action alternatives. The potential direct and indirect impacts resulting from the construction, operation, maintenance and decommissioning of the Proposed Action (Alternative 1) are described in Section 4.21.3.1.

Although fire can benefit natural ecosystems that have evolved with occasional fire and that benefit from the stimulation of growth through the reproduction of plants and wildlife habitat, fire can also be detrimental to biological and other natural resources, such as air quality and water quality. The following subsections described some of the potential effects occurring to these resources as a result of wildland fires.

Biological Resources

Weedy species have been known to invade desert and semi-desert habitats in areas where fires have occurred infrequently because of scant fuel sources. Because vegetation communities can be converted following fire, these changes in dominant vegetation communities can drastically affect plant and animal habitat and can affect the prevalence of special-status species. When fires occur in these areas, vegetation can change, such as converting to non-native grasses, and become more susceptible to ignition. Animals within desert ecosystems are ill-suited to avoid fire and often struggle to use resources and prosper in post-fire communities.

Air Quality

Carbon dioxide, water vapor, carbon monoxide, particulate matter, hydrocarbons, and other constituent materials are all present in wildfire smoke. The specific composition of smoke depends largely on the fuel type, as vegetation types contain different amounts of cellulose, oils, waxes, and starches, which when ignited produce different compounds. In addition, hazardous air pollutants and toxic air contaminants, such as benzene and formaldehyde, are also present in smoke. However, the principal pollutant of concern from wildfire smoke is particulate matter. In general, particulate matter from smoke is very small in size and can be inhaled into the deepest recesses of the lungs, presenting a serious health concern (Lipsett 2008).

Large quantities of pollutants can be released by wildland fires over a relatively short period of time. Air quality during large fires can become severely hazardous and can remain impaired for several days after the fire is ignited.

Water Quality

Fire can affect water quality by increasing potential for erosion and sedimentation in areas where vegetation has been burned by fire. Water chemistry can also be altered through the

introduction of pollutants and chemical constituents. Aquatic environments may also be impacted through the introduction of fire retardant chemicals used during firefighting activities.

Erosion and Sedimentation. Watersheds severely burned by wildfire are vulnerable to accelerated rates of soil erosion and can experience large amounts of post-fire sediment deposits. Increases in post-fire suspended sediments in streams can result from erosion and overland flow, channel scouring, and creep accumulations in stream channels after an event (United States Department of Agriculture [USDA] 2005).

Water Chemistry. Ash deposits generated by a fire can affect the pH of water immediately after the event, potentially increasing to levels that violate water quality standards. In addition, increases in the pH of nearby soil can also cause increases in stream flow pH (USDA 2005). Dissolved nitrogen levels can increase after fires as a result of accelerated mineralization and nitrification (dissolved nitrogen is commonly studied as an indicator of fire disturbance), but these levels do not typically exceed established water quality standards (USDA 2005). Dissolved phosphorous, sulfur, chloride, and total dissolved solids levels can increase after a fire, but studies have shown that these increases typically do not result in violation of drinking water quality standards (USDA 2005).

Fire Retardant. The use of fire retardants to protect communities, sensitive resources, or other assets has proven highly effective, but it can have a direct effect on aquatic environments. The use of ammonium-based retardants can affect water quality and, in some instances, they can be toxic to aquatic biota (USDA 2005). Nitrogen-containing retardants can potentially affect drinking water quality, and retardants containing sodium ferrocyanide can potentially be lethal for aquatic organisms (USDA 2005).

4.21.2 CEQA Significance Criteria

The indicators listed below were used to determine if the proposed Stateline Solar facility would result in significant impacts under CEQA to wildland fire ecology. These indicators are the same as the significance criteria for wildland fire listed in the CEQA Environmental Checklist, Appendix G of the CEQA Guidelines. The Proposed Action would result in an adverse impact on wildland fire ecology if it would:

Fire-1: Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

4.21.3 Alternative 1: Proposed Action

As discussed in Chapter 2, the Applicant would implement a Fire Prevention Plan *as a component of the project* for construction, operations*, and decomissioning*. The plan would comply with San Bernardino County regulations, and would include the following elements:

- Design of a road network and Traffic Control Plan that would ensure adequate emergency vehicle access to the site;
- Energizing electrical equipment only after final inspection and approval;
- Monitoring of fire risks during construction and operations to identify and address risks; and
- Use of non-toxic, mineral oil-based coolant that is non-flammable and biodegradable.

During construction, water holding basins constructed for storing water for dust suppression would also act as fire water storage. During operations, a 5,000 gallon aboveground water storage tank would serve to store water for fire suppression.

The Applicant's *Integrated* Weed Management Plan (First Solar *2013c*) would limit the potential for combustible fuels to build up onsite. The *Integrated* Weed Management Plan, *as required by* mitigation measure MM-Veg-4, would minimize the potential for weed colonization and dominance on site by requiring implementation of a risk assessment of the invasive weed species currently known within the study area, procedures to control their spread on site, and procedures to help minimize the introduction of new weed species. Implementation of this mitigation measure would not completely eliminate the *potential for* introduction of noxious weeds into the study area, but it would minimize their introduction and control their spread on the *Project* site.

4.21.3.1 Direct and Indirect Impacts

In general, the potential for wildfires on or near the proposed facility location is low. As discussed in Section 3.21, the proposed site is located within a moderate FHSZ, and there are no areas with a high FHSZ in the vicinity of the project site (CAL FIRE 2012). According to the Nevada Community Wildfire Risk/Hazard Assessment Project, the area near Primm, Nevada, is classified as a low hazard community with respect to fire, including low interface fuel hazard condition, low ignition risk, and low community hazard rating (Resource Concepts, Inc. 2005). In addition, the Proposed Action would require clearing of vegetation, grading, and maintaining the site devoid of vegetation throughout the operational period, thus limiting the potential for combustible material onsite.

Construction

Construction activities would involve the use of vehicles and heavy machinery, which could potentially result in the ignition of a wildfire. Wildfire ignition could also occur as a result of personnel smoking onsite. During construction, heavy equipment and passenger vehicles would drive on vegetated areas prior to clearing and grading, and could increase the risk of fire through contact between heated mufflers and vegetation. Although the characteristics of the site present only a moderate fire hazard, during extreme weather conditions a grass fire originating at the site could spread across the alluvial fan out of control and pose a risk to life and property.

Even though potential ignition sources such as heavy equipment would be used during construction, the probability of a wildfire to occur as a result of project construction would be low due to the lack of fuel. One of the first activities to occur as part of construction would be removal of vegetation and site grading, so any potential fuel material would be removed during the initial stages of construction.

If the introduction of invasive, non-native plants is not controlled during construction, over time the project site could become dominated with non-native plants that tend to increase the frequency and severity of wildfires. The Applicant would implement *their Integrated Weed Management Plan*, including a plan for vegetation management, prior to construction.

Mitigation measure MM-Fire-1 would require implementation of *the fire prevention and response components of the Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b)*, including minimum standards for fire-safe practices during construction, which would minimize the potential for a wildfire ignition to occur as a result of project-related construction practices activities and the presence of personnel on site. Because these mitigation measures would not disturb or disrupt the natural environment and would not threaten the health or safety of people, their implementation would not result in adverse impacts.

Operation and Maintenance

The probability of a wildfire to occur as a result of project operations would be low due to the general site conditions, the limited activities that would occur onsite, and maintenance of *on-site vegetation* during operations. If a wildfire occurred, it could result in damage to biological resources and other natural resources, such as air quality and water quality, as discussed above, in addition to the potential for loss of life and destruction of property.

The Applicant's *Integrated* Weed Management Plan (First Solar *2013c*), in combination with mitigation measure MM-Veg-4, would minimize the potential for weed colonization and dominance on site by requiring implementation of a risk assessment of the invasive weed species currently known within the study area, procedures to control their spread on site, and procedures to help minimize the introduction of new weed species. Mitigation measure MM-Fire-2 would require that project facilities are designed, constructed, and operated in accordance with applicable fire protection and other environmental, health and safety requirements.

A potentially adverse impact associated with releases of hazardous materials could occur if heavy metals (cadmium and tellurium) used in the CdTe PV modules were to be released to the air or surrounding ground surface as a result of a fire. A substantial amount of research has been conducted regarding the potential for releases of heavy metals associated with CdTe PV modules, including studies by the Brookhaven National Laboratory in the U.S., and studies by government agencies and research institutions in Europe. These studies have been conducted to evaluate potential risks associated with installation of the panels in residences and commercial buildings where fires may occur.

The French Ministry of Ecology, Energy, Sustainable Development, and the Sea performed an assessment of First Solar's CdTe PV program and concluded that, "During standard operation of CdTe PV systems, there are no cadmium emissions – to air, to water, or to soil. In the exceptional case of accidental fires or broken panels, scientific studies show that cadmium emissions remain negligible. Accordingly, large-scale deployment of CdTe PV can be considered safe to human health and the environment" (Lincot 2009).

Experimental studies have been conducted by researchers at Brookhaven National Laboratory. In these studies, small-scale glass-CdTe-glass panels were subjected to temperatures up to 1,110 degrees Celsius (°C), which are representative of the range of temperatures that could occur in residential or commercial fires (Fthenakis and others 2004; Fthenakis and others 2005). *In comparison, a study by the Univeristy of Toronto evaluated the magnitude and duration of peak temperatures in grass fires, which are more representative of the type of fire that could occur at the project site. In that study, the peak temperature reached was 800 to 1,000°C, and the duration was only for 15 seconds (Martell 2009).* In the *Brookhaven* study, a small amount of cadmium was released from the edges of the panels before the glass edges fused and sealed in the remaining material. The amount of cadmium released from a utility-scale panel was less than 0.04 percent of the contained cadmium. The authors also note that, in their investigations, they had not identified any cases in which fires had been reported that involved PV panels. Fires had occurred in terminal boxes at PV facilities, but these fires had never been reported to spread to the panels.

Overall potential release of cadmium during a fire is a very unlikely occurrence. The panels themselves contain no combustible material. The manner in which vegetation would be removed and managed throughout the operational period means that there would be no fuel sources located near the panels. Although electrical fires occur in substations, there would be no fuel or mechanism for such a fire to spread to the panels. Should a fire reach the panels, the glass-CdTe-glass construction of the panels would eliminate the potential for the release of cadmium.

Decommissioning

The decommissioning of the project would be similar to the construction activities described earlier, and would include demolition and removal of above-ground and subsurface facilities and site contouring and restoration. However, the duration of decommissioning would be shorter than the duration of construction.

The risk of wildfire ignition during decommissioning would be similar to that during construction, and would occur as a result of the use of heavy equipment and personnel on site. The Fire Safety components of the Applicant's Emergency Response and Hazardous Materials Management Plan (First Solar 2012b), required as part of mitigation measure MM-Fire-1, includes a requirement for fire-safe practices during decommissioning activities.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the existing Ivanpah DWMA would not result in any potential threats associated with wildland fires.

4.21.3.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) are presented below based on the CEQA Significance Criterion presented in Section 4.21.2.

Fire-1

During construction, operation and maintenance, and decommissioning of the proposed Stateline Solar Farm facility, wildfires may be caused by combustion of native materials, smoking, and refueling and operating vehicles and other equipment off road. The Applicant's Fire Management Plan required in mitigation measure MM-Fire-1 establishes standards and practices that would minimize the risk of a wildfire and, in the event of fire, provide for immediate suppression and notification. Compliance with applicable fire protection requirements as part of MM-Fire-2 and minimizing the introduction and spread of non-native plants as required in MM-Veg-4 would reduce the risk of wildfire ignition such that the baseline level of wildfire frequency and severity is maintained, rendering this impact less than significant.

4.21.4 Alternative 2: 2,385 Ac Alternative

4.21.4.1 Direct and Indirect Impacts

Construction

The wildfire-related construction impacts of Alternative 2 would be nearly identical to those of Alternative 1. Construction activities would last for a slightly longer time, and would include an area south of the Primm Valley Golf Course as part of the bifurcated footprint. The vegetation characteristics of the separate area are expected to be the same as those of the Proposed Action, so there would be no difference in the potential for a wildland fire. Mitigation measures MM-Fire-1, MM-Fire-2, and MM-Veg-4 would *minimize* the risk of wildfire ignition and spread.

Operation and Maintenance

The wildfire-related operational impacts of Alternative 2 would be nearly identical to that of Alternative 1. Mitigation measures MM-Fire-1 and MM-Veg-4 would *minimize* the risk of wildfire ignition and spread.

Decommissioning

The wildfire-related decommissioning impacts of Alternative 2 would be nearly identical to that of Alternative 1. Decommissioning activities would be slightly more intense as a result of the larger project acreage in a bifurcated footprint.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be the same under Alternative 2 as Alternative 1.

4.21.4.2 CEQA Significance Determinations

The CEQA significance determinations for Alternative 2 are the same as for Alternative 1.

4.21.5 *Revised* Alternative 3: *1,685* Ac Alternative

4.21.5.1 Direct and Indirect Impacts

Construction

The wildfire-related construction impacts of Revised Alternative 3 would be reduced from those of the Proposed Action due to the smaller project footprint. Construction activities would include an area further to the east than that of the Proposed Action. The vegetation characteristics of the separate area are expected to be the same as those of the Proposed Action, so there would be no difference in the potential for a wildland fire. Mitigation measures MM-Fire-1, MM-Fire-2, and MM-Veg-4 would *minimize* the risk of wildfire ignition and spread.

Operation and Maintenance

The wildfire-related operational impacts of *Revised* Alternative 3 would be nearly identical to that of Alternative 1. Mitigation measures MM-Fire-1 and MM-Veg-4 would *minimize* the risk of wildfire ignition and spread.

Decommissioning

The wildfire-related decommissioning impacts of *Revised* Alternative 3 would be nearly identical to that of Alternative 1. Mitigation measures MM-Fire-1, MM-Fire-2, and MM-Veg-4 would *minimize* the risk of wildfire ignition and spread.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be the same under *Revised* Alternative 3 as Alternative 1.

4.21.5.2 CEQA Significance Determinations

The CEQA significance determinations for Revised Alternative 3 are the same as for Alternative 1.

4.21.6 Alternative 4: Reduced Acreage Alternative

4.21.6.1 Direct and Indirect Impacts

Construction

The wildfire-related construction impacts of Alternative 4 would be reduced from those of the Proposed Action due to the smaller project footprint. Mitigation measures MM-Fire-1, MM-Fire-2, and MM-Veg-4 would *minimize* the risk of wildfire ignition and spread.

Operation and Maintenance

The wildfire-related operational impacts of Alternative 4 would be *similar to those of the Proposed Action*. Mitigation measures MM-Fire-1 and MM-Veg-4 would *minimize* the risk of wildfire ignition and spread.

Decommissioning

The wildfire-related decommissioning impacts of Alternative 4 would be *similar to those of the Proposed Action*. Mitigation measures MM-Fire-1, MM-Fire-2, and MM-Veg-4 would *minimize* the risk of wildfire ignition and spread.

Modify Boundary of Ivanpah DWMA

The modification of the boundary of the Ivanpah DWMA would be the same under Alternative 4 as Alternative 1.

4.21.6.2 CEQA Significance Determinations

The CEQA significance determinations for Alternative 4 are the same as for Alternative 1. Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

4.21.7 Alternative 5: No Action Alternative

4.21.7.1 Direct and Indirect Impacts

Under Alternative 5, the *Proposed Action* would not be constructed and no impacts *associated with the* Proposed Action *would occur*. The land on which the project is proposed would remain available to other uses that are consistent with the BLM's land use plan, including recreation, livestock grazing, and utility lines in designated corridors.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under the No Action Alternative. Land uses associated with the Ivanpah DWMA would continue as they are today.

Because this action does not present the potential for wildland fires, the No Action Alternative would have no wildland fire impacts.

4.21.7.2 CEQA Significance Determinations

Alternative 5 would result in no wildland fire ecology impacts.

4.21.8 Alternative 6: No Project, Exclude Solar Alternative

4.21.8.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. The land on which the project is proposed would remain available to other uses that are consistent with the BLM's land use plan, including recreation, livestock grazing, and utility lines in designated corridors, but excluding solar energy development. These activities could potentially result in wildfire ignitions, but the potential for ignitions would be expected to be lower than the Proposed Action, because there would be fewer vehicles, heavy equipment, and personnel associated with these activities.

Modify Boundary of Ivanpah DWMA

The impacts of the modification of the boundary of the Ivanpah DWMA would be the same under Alternative 6 as the Proposed Action.

4.21.8.2 CEQA Significance Determinations

Alternative 6 would result in no wildland fire ecology impacts.

4.21.9 Alternative 7: No Project, Approve Solar Alternative

4.21.9.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The *Proposed Action* would not be constructed on the project site and the project site would remain vacant in the near-term. *As result, there would be no impacts to wildland fire ecology associated with the Proposed Action.* If *a solar energy facility were proposed in the future as a result of the Plan amendment,* the proposed solar energy facility could use a different technology, construction methods, and vegetation management procedures than the Proposed Action. Therefore, the *impacts of such a project are speculative at this time*, and would be evaluated in a project-specific environmental analysis.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 7. Land uses associated with the Ivanpah DWMA would continue as they are today*, and there would be no impacts associated with the Proposed Action*.

4.21.9.2 CEQA Significance Determinations

Alternative 7 would result in no wildland fire ecology impacts.

4.21.10 Cumulative Impacts

4.21.10.1 Geographic Extent/Context

The geographic area for cumulative wildland fire impacts includes other projects which could combine with the effects of the Proposed Action to contribute to the risk for wildland fire. For purposes of this analysis, this area is estimated to be within one mile of the site boundary. The temporal scope for cumulative wildland fire impacts includes the duration of construction, operation, and decommissioning of the Proposed Action.

4.21.10.2 Existing Cumulative Conditions

A cumulative wildland fire impact would occur if multiple projects were to increase the frequency of fires in the same location, which would result in indirect impacts on natural resources as described in Section 4.21.1.

4.21.10.3 Reasonably Foreseeable Projects

Table 4.1-1 provides a listing of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects, various BLM-authorized actions/activities, proposed or approved projects within the County's jurisdiction, and other actions/activities that the Lead Agencies consider reasonably foreseeable. Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA or will do so prior to approval. Even if environmental review has not been completed for the cumulative projects described in Table 4.1-2, their effects were considered in the cumulative impacts analysis in this *PA and* EIS/EIR. Projects currently under construction in the vicinity of the proposed facility include the Ivanpah SEGS solar facility (3,471 acres) and the EITP. Proposed projects in the vicinity of the proposed facility that would undergo construction, operations, and/or decommissioning concurrently with the Proposed Action include the Desert Xpress high speed passenger rail line and JPOE.

4.21.10.4 Cumulative Impacts Associated with Proposed Action

Construction

It is expected that one or more of the cumulative projects described above may be under construction at the same time as the Proposed Action. In particular, construction of the Ivanpah SEGS facility and EITP are expected to continue through 2013, and construction of the JPOE and Desert Xpress is expected to occur in 2013.

As a result of these concurrent construction projects, there would be multiple potential sources of that could result in wildfire ignitions due to the use of heavy equipment, smoking, or welding. Transmission lines can cause wildfire ignitions if maintenance is not properly conducted, if a low-flying plane or helicopter were to crash into the line, or sometimes as a result of wildlife collisions. Ignitions from I-15 could originate from drivers throwing cigarette butts out of car windows. Wildfire ignitions due to construction of these cumulative projects could result in wildfire ignitions. Wildfire ignitions from the Proposed Action could combine with ignitions from these other projects and I-15 to increase the frequency of wildfires above the baseline fire

frequency. The combination of these projects being constructed concurrently could increase the frequency of fire in the area above natural conditions. However, because the area has a low potential for wildfire, the increase in risk associated with construction of the projects is not expected to result in a substantial risk of wildfires. With mitigation measures required for the Proposed Action (MM-Fire-1, MM-Fire-2, and MM-Veg-4), the contribution of the Proposed Action to this cumulative impact would be reduced. Similar mitigation measures are required for the other projects in the area, reducing the potential even further. As a result, the overall cumulative increase in fire frequency would not be substantial.

Operation and Maintenance

It is expected that all of the cumulative projects described above would be operational at the same time as the Proposed Action. Similar to the construction and operations impacts associated with the Proposed Action, the majority of the potential impacts associated with these projects are likely to be associated with the use of heavy equipment and large numbers of site workers during construction. Impacts during operations, with reduced levels of equipment use and associated staff, are expected to be lower than construction-related impacts. Still, operations of the cumulative projects would create a long-term increased risk of wildland fires in the area. Again, because the area has a low potential for wildfire, the increase in risk associated with operation of these projects is not expected to result in a substantial risk of wildfires. With mitigation measures required for the Proposed Action (MM-Fire-1 and MM-Veg-4), the contribution of the Proposed Action to this cumulative impact would be reduced. Similar mitigation measures are *(or will be)* required for the other *reasonably foreseeable* projects in the *Project* area, reducing potential *wildfire impacts* even further. As a result, the overall cumulative increase in fire frequency would not be substantial.

Decommissioning

Wildland fire impacts associated with decommissioning of the Proposed Action would be similar to those identified for construction. Again, because the area has a low potential for wildfire, the increase in risk associated with decommissioning of the Stateline project concurrently with operations and decommissioning of other projects is not expected to result in a substantial risk of wildfires. With mitigation measures required for the Proposed Action (MM-Fire-1, MM-Fire-2, and MM-Veg-4), the contribution of the Proposed Action to this cumulative impact would be reduced. Similar mitigation measures are *(or will be)* required for the other *reasonably foreseeable* projects in the area, reducing the potential even further. As a result, the overall cumulative increase in fire frequency would not be substantial. Also, the Proposed Action's contribution to cumulative wildland fire impacts during decommissioning would be temporary. Following decommissioning, no further project-related activities would occur, and adverse impacts would cease.

Modify Boundary of Ivanpah DWMA

Modification of the boundary of the existing Ivanpah DWMA would not create wildland fire impacts, and would therefore not contribute to cumulative impacts associated with wildland fire.

4.21.10.5 CEQA Significance Determinations

Significance conclusions for the impacts identified are presented below based on the CEQA Significance Criterion presented in Section 4.21.2.

Fire-1

Wildfire ignitions from construction, operation, and decommissioning of the Proposed Action could combine with ignitions from drivers on I-15, Ivanpah SEGS, the JPOE, and other projects to increase the frequency of wildfires above the baseline fire frequency in the area. With mitigation measures required for the Proposed Action (MM-Fire-1, MM-Fire-2, and MM-Veg-4), the contribution of the Proposed Action to this cumulative impact would be minimized and would be less than considerable.

4.21.10.6 Alternatives

Alternative 2: 2,385 Ac Alternative

For Alternative 2, the potential impacts could occur over an area of 2,385 acres, and therefore the potential for an adverse impact would be slightly greater than that of the Proposed Action. Alternative 2 would include implementation of a portion of the solar farm in a separate area to the south of the Primm Valley Golf Course. Based on a review of the vegetation condition of this area, it is expected that the potential for wildland fire in that area is not any greater or less than the area for the Proposed Action. Therefore, the cumulative impacts associated with Alternative 2 would be the same as those described above for the Proposed Action.

***Revised* Alternative 3: *1,685* Ac Alternative**

Wildland fire impacts associated with *Revised* Alternative 3 would be *reduced from those associated with the Proposed Action because of the smaller land area*. Therefore, the cumulative impacts associated with *Revised* Alternative 3 would be *lower than* those described for the Proposed Action.

Alternative 4: Reduced Acreage Alternative

Wildland fire impacts associated with Alternative 4 would be approximately the same as those associated with the Proposed Action, but would be reduced because the alternative would affect a smaller land area. Therefore, the cumulative impacts associated with Alternative 4 would be the same or lower than those described for the Proposed Action.

Alternative 5: No Action Alternative

Alternative 5, the No Action Alternative, would not contribute to any adverse cumulative wildland fire impacts.

Alternative 6: No Project, Exclude Solar Alternative

By denying the *ROW* application *for the Project,* Alternative 6 would *not contribute to cumulative wildland fire impacts.*

Alternative 7: No Project, Approve Solar Alternative

By denying the *ROW* application *for the Project*, Alternative 7 would not contribute to cumulative wildland fire impacts. *As a result of the Plan amendment under Alternative 7, the* site could potentially be used for solar *energy* development in the future. *While the wildland* fire impacts

associated with *such* future actions *might be similar to the Proposed Action, they would be speculative at this time and* would be considered in a later project-specific environmental analysis.

4.21.11 Mitigation Measures

MM-Fire-1: The Applicant shall implement the *fire prevention and response* components of their Emergency Response and Hazardous Materials Management Plan (First Solar 2012b) for use during construction and decommissioning. The Applicant shall submit the Plan, along with maps of the project site and access roads, to the San Bernardino County Fire Department for review and approval prior to the issuance of a right of way grant. The Plan shall contain notification procedures and emergency fire precautions including, but not limited to, the following:

a. All internal combustion engines used at the project site shall be equipped with spark arresters. Spark arresters shall be in good working order.

b. Light trucks and cars shall be used only on roads where the roadway is cleared of vegetation. Mufflers on all cars and light trucks shall be maintained in good working order.

c. Fire rules shall be posted on the project bulletin board at the contractor's field office and areas visible to employees.

d. Equipment parking areas and small stationary engine sites shall be cleared of all extraneous flammable materials.

e. Personnel shall be trained in the practices of the Fire Safety Plan relevant to their duties. Construction and maintenance personnel shall be trained and equipped to extinguish small fires in order to prevent them from growing into more serious threats.

f. The Applicant shall make an effort to restrict use of chainsaws, chippers, vegetation masticators, grinders, drill rigs, tractors, torches, and explosives to outside of the official fire season. When the above tools are used, water tanks equipped with hoses, fire rakes, and axes shall easily accessible to personnel.

g. Smoking shall be prohibited in wildland areas and within 50 feet of combustible materials storage, and shall be limited to paved areas or areas cleared of all vegetation.

h. Fires ignited onsite shall be immediately reported to BLM and the San Bernardino County Fire Department.

i. Install electrical safety signage. Prior to energization or final inspection, whichever occurs first, the Applicant shall install electrical safety signage on all solar arrays in the immediate vicinity of all wiring and on all electrical conduit using weather-resistant and fade-proof materials. The purpose of this measure is to reduce the risk of electric shock and fire. Warning signs shall be designed to be evident to any person tampering with, working on, or dismantling project photovoltaic panels. Signs shall read: "CAUTION: Solar PV Wiring May Remain Energized After Disconnection during Daylight Hours. Tampering with Wiring May Result in ELECTRIC SHOCK or FIRE. Death or Serious Injury May Result. Do Not Expose Wires to Vegetation or Other Flammable Materials." This requirement shall be clearly stated in the fire prevention plan.

j. The engineering, procurement, and construction contract(s) for the project shall clearly state the requirements of this mitigation measure.

MM-Fire-2: Project facilities shall be designed, constructed, and operated in accordance with applicable fire protection and other environmental, health and safety requirements. In

compliance with San Bernardino County requirements. *The fire prevention and response components of the Emergency Response and Hazardous Materials Management Plan shall include:*

- The purpose and applicability of the plan; and
- Procedures for fire prevention and response that include identification of site-specific and operational risks, tools and equipment needed, and fire prevention and safety considerations; red-flag warning system, activity levels, fire-related training, and coordination with BLM and San Bernardino County.

4.21.12 Residual Impacts After Mitigation

Implementation of mitigation measures defined in Section 4.21.10 would minimize the impacts of the Proposed Action on wildland fire incidence in the surrounding area. There would be no unavoidable adverse impacts remaining with implementation of these mitigation measures.

4.22 Wildlife Resources

4.22.1 Introduction

This section identifies and evaluates the direct and indirect impacts on wildlife resources of the Proposed Action and each alternative. The analyses use the methodologies prescribed under NEPA and CEQA. The section also evaluates impact significance in terms of CEQA criteria and, as needed, specifies mitigation measures to reduce the impacts to less than significant levels.

4.22.2 CEQA Significance Criteria

The following criteria were used to determine the significance of or project wildlife resource impacts under CEQA:

- Wild-1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a legally protected, candidate, sensitive, or special status species in local or regional plans, policies, or regulations, by the CDFW or USFWS;
- Wild-2: Interfere substantially with the movement of any native resident or migratory fish or wildlife species, interfere with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Wild-3: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;
- Wild-4: Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

The Project and alternatives would not conflict with local policies or ordinances protecting biological resources (Criteria Wild-3) because the County has no jurisdiction over biological resources on federal lands. Similarly, the Project and alternatives would not conflict with the provisions of an approved local, regional, or state habitat conservation plan, since no such plan is applicable to the proposed site. Therefore, Criteria Wild-3 and Wild-4 are inapplicable to the Project and alternatives, and are not addressed further in the impact analysis presented in this section.

4.22.3 Alternative 1: Proposed Action

4.22.3.1 Direct and Indirect Impacts

The general types of project activities and the impacts they could have to wildlife individuals and habitat are discussed for project construction, operations, and decommissioning in the following subsections. The primary issues evaluated with respect to wildlife resources include the loss or alteration of native habitats, increased habitat fragmentation, animal displacement, and direct loss of wildlife. Direct impacts to wildlife populations that are evaluated include direct mortalities from development of the project, habitat loss or alteration, habitat fragmentation, animal displacement, and vehicle-strike impacts. Indirect impacts evaluated include wildlife avoidance of the area due to increased noise, additional human presence, and light sources.

The potential impacts of the project on terrestrial wildlife can also be classified as short-term, long-term, and permanent. Short-term impacts would arise from temporary land use, heavy equipment use, surface disturbance, and presence of noise and light during construction. Once construction ceases, temporary land use areas would be restored and would become available

again as wildlife habitat. Long-term impacts would result from the long-term occupation of the 2,143 acre land area throughout the 30 year operating life of the facility, as well as the presence of humans, noise, and light sources during operations. These impacts would cease upon project decommissioning and completion of successful reclamation. Permanent impacts would consist of permanent changes to habitats and the wildlife populations that depend on those habitats, irrespective of reclamation success.

In this section, the general types of project activities that would occur, and that could have direct or indirect impacts to wildlife during construction, operations, and decommissioning, are discussed. Following that discussion, the impacts to specific special status wildlife species are presented.

Construction

Equipment and Vehicle Collision

Potential direct impacts associated with the increase in vehicle traffic and use of heavy equipment would include an increase in the potential for wildlife/vehicle collisions during the construction of the project, resulting in an unquantifiable, but probably minor, reduction in wildlife populations. Insects, reptiles, and small mammals that utilize the existing habitats within the project area would be affected directly and indirectly by construction activities. Clearing and grading would result in the direct injury and mortality of some individuals, particularly to less mobile terrestrial species. If construction occurs during the breeding season, direct impacts to burrowing or nesting wildlife species could include nest or burrow abandonment and loss of eggs or young. Construction of the project could also result in burial in dens or burrows, and collisions with vehicles and power line conductors or towers.

Impacts would be reduced through implementation of Applicant-Proposed Measures (APMs) and mitigation measures required by BLM for protection of wildlife and other resources. APMs that would contribute to reducing potential direct wildlife impacts associated with equipment and vehicle collisions include APM-Wild-1 (desert tortoise protection measures in NEMO Plan Amendments), APM-Wild-2 (relocation of tortoises), APM-Wild-3 (tortoise exclusion fencing), and APM-Wild-5 (*bird and bat conservation measures*). Other mitigation measures that would contribute to reducing potential direct wildlife impacts associated with equipment and vehicle collisions include MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (Worker Environmental Awareness Program [WEAP]), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), MM-Wild-6 (Pre-Construction Surveys), MM-Wild-7 (Desert Tortoise Handling Requirements), MM-Wild-11 (Bird and Bat Conservation Strategy), and MM-Wild-12 (Seasonal Vegetation Removal Restrictions).

Habitat Loss or Degradation

Vegetation clearing and grading of 2,023 acres of land associated with project construction would directly affect wildlife by removal and crushing of shrubs and herbaceous vegetation, resulting in loss and fragmentation of cover, breeding and foraging habitat. The majority of this land area would be fenced to preclude wildlife access throughout the operational period of the project. Impacts to wildlife from surface disturbance would include the temporary (short-term and long-term) and permanent reduction or loss of habitat. Displacement of wildlife at the project site could also result in some local reductions in wildlife populations if adjacent habitats are at carrying capacity.

Direct habitat loss and degradation both inside and outside of the approved ROW area could also occur if project activities resulted in release of dust or hazardous materials, resulted in

modification of soil erosion or sedimentation rates, or introduced or encouraged the growth of noxious weeds. Hazardous material and pollutant releases could occur as a result of the project and alternatives. Materials released could include fuels and other materials used by work crews as part of routine construction and maintenance activities. Hazardous materials could also be released if construction-related excavation were to disturb areas that have existing environmental contamination. Hazardous materials release could impact biological resources by injuring or killing vegetation and wildlife through either short-term acute exposure or long-term chronic exposure. Soil erosion from site grading and use of heavy equipment, which affects vegetation and soil properties, could have an adverse effect on wildlife foraging and burrowing potential to lands outside of the project boundaries. Noxious weeds could impact wildlife species by displacing native vegetation species necessary for forage or cover.

Indirect effects to wildlife would also occur due to increased fragmentation and reduction of connectivity between wildlife populations. The implementation of project fencing to exclude wildlife from the project site would restrict passage of wildlife around and through the project site. This would occur especially if the project fencing were to extend into areas that are not suitable habitat for certain species, such as Ivanpah Dry Lake, Metamorphic Hill, or the Clark Mountains.

Impacts to habitat would be reduced through implementation of APMs and mitigation measures required by BLM for protection of wildlife and other resources. APMs that would contribute to reducing potential indirect wildlife impacts associated with loss or degradation of habitat include APM-Wild-1 (desert tortoise protection measures in NEMO Plan Amendments), APM-Wild-2 (relocation of tortoises), APM-Wild-4 (*Integrated* Weed Management Plan), APM-Wild-6 (Dust Control), APM-Wild-8 (chemical storage), APM-Wild-9 (fuel storage), and APM-Wild-10 (Solid Waste Management). Other mitigation measures that would contribute to reducing potential direct and indirect wildlife impacts associated with habitat loss or degradation include MM-Air-1 (Air Quality Construction Management Plan), MM-Veg-1 (Minimize Impacts to Vegetation Communities), MM-Veg-2 (Designated Biologist), MM-Veg-3 (*Pre-Construction Soil and Plant Salvage*), MM-Veg-4 (*Integrated* Weed Management Plan), MM-Veg-5 (Revegetation of Temporary Disturbed Areas *and Project Site*), MM-Veg-6 (Streambed Alteration Agreement), MM-Water-8 (Construction SWPPP), MM-Water-9 (Storm Water Management Plan), MM-Water-10 (Spill Control and Environmental Training), MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), MM-Wild-8 (Habitat Acquisition for Desert Tortoise), and MM-Wild-11 (Bird and Bat Conservation Strategy).

Human Presence, Noise, and Light

Indirect impacts to wildlife species would result from human presence, noise, and light in the project area. Increased levels of noise and human activity would be detrimental to many wildlife species. Noise from construction activities could temporarily discourage wildlife from foraging and nesting immediately adjacent to the project area. Many bird species rely on vocalization during the breeding season to attract a mate within their territory. Noise levels from certain construction, operations, and decommissioning activities could reduce the reproductive success of nesting birds.

The most common wildlife responses to noise and human presence are avoidance or accommodation. Avoidance would result in displacement of wildlife from an area larger than the actual disturbance area. The total extent of habitat lost as a result of wildlife avoidance response is impossible to predict since the degree of this response varies from species to species, and can even vary between different individuals of the same species. Also, after initial

avoidance of human activity and noise producing areas, certain wildlife species may acclimate to the activity and begin to reoccupy areas formerly avoided.

Artificial lighting impacts on wildlife species may include disorientation from and attraction to artificial light, impact-related mortality due to disorientation, and effects on the light-sensitive cycles of many species (Saleh 2007). Lighting plays a substantial role in collision risk because lights attract nocturnal migrant songbirds, bats, and flying insects, and major bird kill events have been reported at lighted communications towers (Manville 2001). Bright night-lighting close to the ground can attract bats and flying insects and disturb wildlife (e.g., nesting birds, foraging mammals).

Impacts associated with human presence, noise, and light would be reduced through implementation of APMs and mitigation measures required by BLM for protection of wildlife and other resources. APMs that would contribute to reducing potential indirect wildlife impacts associated with noise and light include APM-Wild-7 (Lighting Restrictions) and APM-Wild-11 (limit noise to daytime hours). An additional mitigation measure that would contribute to reducing potential indirect wildlife impacts associated with light is MM-Wild-9 (Night Lighting).

Hydrology

Biological resources could potentially be impacted if the Proposed Action were to modify the availability or quality of surface water and/or groundwater. Although the Proposed Action would use groundwater, the large depth to groundwater (more than 200 feet), absence of perennial surface water, and large distance from riparian areas (several miles) mean that the project would not have the potential to impact wildlife through groundwater depletion or impacts to riparian vegetation.

The Proposed Action could potentially have an indirect effect on wildlife habitat adjacent to the project site and outside of the project ROW, if the project were to modify downgradient sedimentation or erosion rates. This could occur as a result of the removal of soil-stabilizing vegetation or modification of onsite precipitation infiltration rates.

Impacts associated with modification of downgradient sedimentation and erosion rates would be reduced through implementation of mitigation measures required by BLM for protection of wildlife and other resources. Mitigation measures that would contribute to reducing potential direct and indirect wildlife impacts associated with modification of sedimentation or erosion rates include MM-Air-1 (Air Quality Construction Management Plan), MM-Veg-1 (Minimize Impacts to Vegetation Communities), MM-Veg-2 (Designated Biologist), MM-Veg-3 (*Pre-Construction Soil and Plant Salvage*), MM-Veg-5 (Revegetation of Temporary Disturbed Areas *and Project Site*), MM-Veg-6 (Streambed Alteration Agreement), MM-Water-8 (Construction SWPPP), and MM-Water-9 (Storm Water Management Plan).

Presence of Open Water

Construction of the Proposed Action and other action alternatives would include the use of temporary water storage ponds to store and provide water for dust control. Each pond would have a capacity of 2 million gallons, and would be approximately 160 feet by 160 feet in size, or approximately 0.6 acres. The ponds could have an impact on wildlife by attracting avian and insect species to the active construction area, and by attracting potential predators that could prey on desert tortoises and other wildlife.

Impacts associated with the temporary water storage ponds would be reduced through implementation of MM-Wild-13 (Management of Temporary Water Storage Ponds).

Increased Predation

Wildlife species near the project site, both inside and outside of the ROW, could experience increased predation levels from ravens and other predators attracted to the project site. This would be an indirect impact, and would continue during construction, operations, and decommissioning for as long as workers are present.

Impacts associated with increased predation would be reduced through implementation of APMs and mitigation measures required by BLM for protection of wildlife and other resources. APMs that would contribute to reducing the potential attraction of predators include APM-Wild-1 (desert tortoise protection measures in NEMO Plan Amendments), APM-Wild-4 (*Integrated* Weed Management Plan), APM-Wild-7 (Lighting Restrictions), and APM-Wild-10 (Solid Waste Management). Other mitigation measures that would contribute to reducing the attraction of predators include MM-Veg-4 (*Integrated* Weed Management Plan), MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-10 (Raven Management Plan), and MM-Wild-13 (Management of Temporary Water Storage Ponds).

Operation and Maintenance

Equipment and Vehicle Collision

Operations and maintenance activities would involve use of vehicles for worker commuting and general maintenance. Potential direct impacts associated with vehicle traffic would include the potential for wildlife/vehicle collisions, resulting in an unquantifiable, but probably minor, reduction in wildlife populations. In general, the operational area would have been cleared of wildlife to the extent practicable, and exclusion and security fencing would have limited the potential for many wildlife species, including desert tortoise and large mammals, to be subject to vehicle collision within the project area. No additional clearing or grading activities would occur during operations, so there would be no additional risk of encountering burrows or nests. The potential would still exist for wildlife to be involved in vehicle collisions on the project access road. In addition, birds, smaller reptiles and mammals, and insects would have access to the operational area, and could be impacted by vehicle collisions. These potential impacts are expected to be minimal, due to the limited activities that will occur during operations. Operational employment would employ approximately 10 persons, resulting in very limited commuting traffic. Vehicle traffic associated with operations is expected to consist of one or two small trucks making limited trips within the project fence.

Birds and bats are known to collide with communications towers, transmission lines, and other elevated structures. The project design would result in the construction of a new 220-kV gen-tie line, which would follow a 150-foot-wide transmission ROW to SCE's proposed Ivanpah Substation, which will be located approximately 2.3 miles south of the Project site. This proposed transmission line would be located within two overlapping designated utility corridors, minimizing additional disturbance to wildlife as a result of collisions.

Impacts during operations would be reduced through implementation of APMs and mitigation measures required by BLM for protection of wildlife and other resources. APMs that would contribute to reducing potential direct wildlife impacts associated with equipment and vehicle collisions include APM-Wild-1 (desert tortoise protection measures in NEMO Plan Amendments), and APM-Wild-3 (tortoise exclusion fencing). Other mitigation measures that would contribute to reducing potential direct wildlife impacts associated with equipment and vehicle collisions include MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-5 (Use of Existing Routes and Speed Limits), and MM-Wild-11 (Bird and Bat Conservation Strategy).

Habitat Loss or Degradation

Removal of habitat during construction would persist throughout the operational period, but operations would not provide any additional habitat loss due to vegetation clearing or grading.

Direct habitat loss and degradation both inside and outside of the approved ROW area could occur if project operations resulted in release of dust or hazardous materials, resulted in modification of soil erosion or sedimentation rates, or introduced or encouraged the growth of noxious weeds. Hazardous materials released could include fuels and other materials used by work crews as part of routine maintenance activities. Hazardous materials release could impact biological resources by injuring or killing vegetation and wildlife through either short-term acute exposure or long-term chronic exposure. Soil erosion from the operational area could have an adverse effect on wildlife foraging and burrowing potential to lands outside of the project boundaries. Noxious weeds could impact wildlife species by displacing native vegetation species necessary for forage or cover.

Indirect effects to wildlife would also occur due to increased fragmentation and reduction of connectivity between wildlife populations. The impacts associated with the implementation of project fencing during construction would persist throughout the operational period by restricting the passage of wildlife around and through the project site. This would occur especially if the project fencing were to extend into areas that are not suitable habitat for certain species, such as Ivanpah Dry Lake, Metamorphic Hill, or the Clark Mountains. Impacts to habitat connectivity for individual special-status species are discussed with respect to those species in the subsections below.

Loss of habitat and other impacts associated with the project could adversely affect local populations of invertebrates, insects, reptiles, birds, and small mammals that have small home ranges within the Ivanpah Valley. However, the project is not expected to cause population effects of common wildlife species at the regional level. For common wildlife with larger home ranges, population level affects are not anticipated because the project represents a small fraction of the available habitat within the region

Impacts to habitat would be reduced through implementation of APMs and mitigation measures required by BLM for protection of wildlife and other resources. APMs that would contribute to reducing potential indirect wildlife impacts associated with loss or degradation of habitat include APM-Wild-1 (desert tortoise protection measures in NEMO Plan Amendments), APM-Wild-4 (*Integrated* Weed Management Plan), APM-Wild-6 (Dust Control), APM-Wild-8 (chemical storage), APM-Wild-9 (fuel storage), and APM-Wild-10 (Solid Waste Management). Other mitigation measures that would contribute to reducing potential direct and indirect wildlife impacts associated with habitat loss or degradation include MM-Air-3 (Operations Emission Reductions), MM-Veg-1 (Minimize Impacts to Vegetation Communities), MM-Veg-2 (Designated Biologist), MM-Veg-3 (*Pre-Construction Soil and Plant Salvage*), MM-Veg-4 (*Integrated* Weed Management Plan), MM-Veg-5 (Revegetation of Temporary Disturbed Areas *and Project Site*), MM-Veg-6 (Streambed Alteration Agreement), MM-Water-9 (Storm Water Management Plan), MM-Water-10 (Spill Control and Environmental Training), MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), MM-Wild-8 (Habitat Acquisition for Desert Tortoise), and MM-Wild-11 (Bird and Bat Conservation Strategy).

Human Presence, Noise, and Light

Indirect impacts to wildlife species would result from human presence, noise, and light in the project area during operations. Increased levels of noise and human activity would be detrimental to many wildlife species. Noise from operation and maintenance activities could

temporarily discourage wildlife from foraging and nesting immediately adjacent to the project area. Many bird species rely on vocalization during the breeding season to attract a mate within their territory. Noise levels from certain construction, operations, and decommissioning activities could reduce the reproductive success of nesting birds.

The most common wildlife responses to noise and human presence are avoidance or accommodation. Avoidance would result in displacement of wildlife from an area larger than the actual disturbance area. The total extent of habitat lost as a result of wildlife avoidance response is impossible to predict since the degree of this response varies from species to species, and can even vary between different individuals of the same species. Also, after initial avoidance of human activity and noise producing areas, certain wildlife species may acclimate to the activity and begin to reoccupy areas formerly avoided.

Artificial lighting impacts on wildlife species may include disorientation from and attraction to artificial light, impact-related mortality due to disorientation, and effects on the light-sensitive cycles of many species (Saleh 2007). Lighting plays a substantial role in collision risk because lights attract nocturnal migrant songbirds, bats, and flying insects, and major bird kill events have been reported at lighted communications towers (Manville 2001). Bright night-lighting close to the ground can attract bats and flying insects and disturb wildlife (e.g., nesting birds, foraging mammals).

In general, impacts associated with noise and lighting during project operations are expected to be minimal. No noise-generating maintenance activities would be conducted. Project employment would be limited to approximately 10 individuals, and most activities would be conducted during daylight hours. Night lighting would be limited to a few locations within the project area, and the type of lighting and its operation would be in compliance with the Applicant's Lighting Management Plan.

Impacts associated with human presence, noise, and light would be reduced through implementation of APMs and mitigation measures required by BLM for protection of wildlife and other resources. APMs that would contribute to reducing potential indirect wildlife impacts associated with noise and light include APM-Wild-7 (Lighting Restrictions) and APM-Wild-11 (limit noise to daytime hours). An additional mitigation measure that would contribute to reducing potential indirect wildlife impacts associated with light is MM-Wild-9 (Night Lighting).

Hydrology

Biological resources could potentially be impacted if project operations were to modify the availability or quality of surface water and/or groundwater. Although the Proposed Action would use groundwater, the large depth to groundwater (more than 200 feet), absence of perennial surface water, large distance from riparian areas (several miles), and limited water use for operations (approximately 20 acre-feet per year) mean that project operations would not have the potential to impact wildlife through groundwater depletion or impacts to riparian vegetation.

Operation of the Proposed Action could potentially have an indirect effect on wildlife habitat adjacent to the project site and outside of the project ROW, if the project were to modify downgradient sedimentation or erosion rates. This could occur as a result of the removal of soil-stabilizing vegetation or modification of onsite precipitation infiltration rates.

Impacts associated with modification of downgradient sedimentation and erosion rates would be reduced through implementation of mitigation measures required by BLM for protection of wildlife and other resources. Mitigation measures that would contribute to reducing potential direct and indirect wildlife impacts associated with modification of sedimentation or erosion rates include MM-Air-3 (Operations Emission Reductions), MM-Veg-1 (Minimize Impacts to Vegetation Communities), MM-Veg-2 (Designated Biologist), MM-Veg-3 (*Pre-Construction Soil*

and Plant Salvage), MM-Veg-5 (Revegetation of Temporary Disturbed Areas *and Project Site*), MM-Veg-6 (Streambed Alteration Agreement), and MM-Water-9 (Storm Water Management Plan).

Presence of Open Water

No open water would be present during project operations. Therefore, there would be no potential for attraction of wildlife or wildlife predators during operations.

Increased Predation

Wildlife species near the project site, both inside and outside of the ROW, could experience increased predation levels from ravens and other predators attracted to the project site during operations. This would be an indirect impact, and would continue during construction, operations, and decommissioning for as long as workers are present.

Impacts associated with increased predation would be reduced through implementation of APMs and mitigation measures required by BLM for protection of wildlife and other resources. APMs that would contribute to reducing the potential attraction of predators include APM-Wild-1 (desert tortoise protection measures in NEMO Plan Amendments), APM-Wild-4 (*Integrated* Weed Management Plan), APM-Wild-7 (Lighting Restrictions), and APM-Wild-10 (Solid Waste Management). Other mitigation measures that would contribute to reducing the attraction of predators include MM-Veg-4 (*Integrated* Weed Management Plan), MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), and MM-Wild-10 (Raven Management Plan).

Decommissioning

Decommissioning and reclamation activities associated with the Proposed Action would have similar impacts to wildlife resources as those described for construction. These activities would include such tasks as vegetation removal, grading, and surface disturbance to remove the solar arrays, above-ground electrical components, and substation components, as well as to remove below-ground infrastructure to a depth of 3 feet. They also include surface disturbance to remove roads and to restore vegetation. However, most decommissioning activities would take place within the fenced project area, so would not have a high potential to impact wildlife species, such as desert tortoise or large mammals, which are excluded by the fence.

It is expected that the impacts during decommissioning would be similar to those of construction of the Proposed Action, but would be reduced because most activities would take place within the exclusion fence. All mitigation measures that are required during construction of the Proposed Action to avoid or minimize impacts to wildlife resources would also be required during decommissioning and reclamation activities.

Closure and decommissioning of the facility would result in the revegetation and rehabilitation of 2,143 acres of land in accordance with the Applicant's Closure, Decommissioning, and Reclamation Plan (Decommissioning Plan; First Solar 2012d), and as required in mitigation measure MM-Lands-2. Because reestablishment of desert vegetative communities would take decades and may differ in composition than the pre-disturbance vegetative community, these *long-term* changes in the vegetative communities could alter the ecosystem's ability to sustain the same type and numbers of wildlife species currently found at the site. The ability of wildlife species to eventually recolonize the reclaimed area would depend on the proximity of other populations, connectivity of habitats, and the mobility of the species. Terrestrial species with small home ranges will not colonize as quickly (if at all, compared to flying organisms or wildlife

with large home ranges). The degree of habitat fragmentation would affect wildlife species ability to recolonize the reclaimed area.

Impacts to Special Status Wildlife Species

Potential impacts for the *16* special status wildlife species identified as potentially occurring within the project area are discussed below. The types of project activities associated with construction, operations, and decommissioning that could cause these impacts were discussed in the above subsections.

Reptiles

Desert Tortoise

The Project Study Area is within the current range of the Mojave population of desert tortoise. The Project is located within the Eastern Mojave Tortoise Recovery Unit, but is not within designated critical habitat for the desert tortoise or any DWMA's. The majority of the Project Study Area includes habitats well-documented to support desert tortoise. Desert tortoise surveys conducted between 2008 and 2011 found 33 live desert tortoises and 234 good-to-excellent burrows/pallets (First Solar *2013e*) within the Project Study Area. The entire Project Study Area (approximately 5,850 acres) is estimated to support 69 adult desert tortoises, with a 95% confidence interval ranging between 27 and 180 adult desert tortoises. Within the Project Study Area, the overall tortoise density is estimated to be 7.2 tortoises per square mile, with a 95% confidence interval ranging between 2.8 to 18.9 adult desert tortoises per square mile.

Tortoise surveys were also conducted in 2012. The most recent surveys concluded that the entire Project Study Area (approximately 5,850 acres) is estimated to support between 79 and 99 adult desert tortoises, with a 95% confidence interval ranging between 31 and 249 adult desert tortoises. Within the Project Study Area, the overall tortoise density is estimated to be 8.5 tortoises per square mile, with a 95% confidence interval ranging between 3.3 to 26.6 adult desert tortoises per square mile.

Construction

Desert tortoise would be adversely impacted by construction activities for the Project. Desert tortoises would be susceptible to death or injury from collisions with project vehicles and equipment during clearing and grading, or any activities where vegetation would be crushed. Project-related traffic on access roads and spur roads, as well as any construction activities at work sites could also result in the death or injury of desert tortoise through collisions. Such activities would also potentially introduce noxious and invasive plant species to project sites, further degrading the quality of desert tortoise habitat in terms of native plant species composition and increasing the risk of wildfires.

Desert tortoises could be harmed by inadvertent hazardous materials spills, including equipment fuel and hydraulic fluid leaks. All crew activities, as well as trash and debris associated with construction of the project, would have the potential to attract predators of the desert tortoise, including common ravens and domestic and feral dogs.

Take in the form of harassment of an undetermined number of individuals would result because Biological Monitors would conduct pre-clearance surveys and pick up and move tortoises out of harm's way. Bladder voiding would cause tortoises to lose potentially critical water reserves and in some cases might lead to death. Handling desert tortoises also increases the risk of transmitting upper respiratory tract disease from infected individuals to healthy individuals. This

condition often leads to death and is one of the reasons for the decline of many desert tortoise populations in the Mojave Desert.

Operation and Maintenance

Potential adverse impacts to desert tortoise as a result of operation and maintenance activities would be temporary in duration and minimal in impact. Most operation and maintenance activities would be conducted within the fenced area, and would involve the use of only one or several vehicles or equipment. The potential for additional loss of habitat or vehicles strike impacts to desert tortoises would be minor. However, impacts associated with the removal of the 2,023 acre project area from available desert tortoise habitat, including disruption of habitat connectivity, would be the same as those associated with construction, and would continue through the operational period.

Decommissioning

Potential adverse impacts to desert tortoise as a result of decommissioning activities would be temporary in duration and minimal in impact. Like operations, most decommissioning activities would be conducted within the fenced area, so the potential for additional loss of habitat or vehicles strike impacts to desert tortoises would be minor. However, impacts associated with the removal of the 2,023 acre project area from available desert tortoise habitat, including disruption of habitat connectivity, would be the same as those associated with construction, and would continue through the decommissioning period.

Closure and decommissioning of the facility would result in the revegetation and rehabilitation of 2,143 acres of land in accordance with the Applicant's Closure, Decommissioning, and Reclamation Plan (Decommissioning Plan; First Solar 2012d), and as required in mitigation measure MM-Lands-2. Because reestablishment of desert vegetative communities would take decades and may differ in composition than the pre-disturbance vegetative community, these *long-term* changes in the vegetative communities could alter the ecosystem's ability to sustain the same numbers of desert tortoises currently found at the site. The ability of desert tortoises to eventually recolonize the reclaimed area would depend on the proximity of other populations, connectivity of habitats, and the mobility of the species. The degree of habitat fragmentation would affect the ability of the desert tortoise to recolonize the reclaimed area.

Equipment and Vehicle Collision

Vehicle traffic would increase as a result of construction and improvement of access roads, increasing the risk of injuring or killing desert tortoise. The potential for increased traffic-related tortoise mortality is greatest along paved roads where vehicle frequency and speed is greatest though tortoises on dirt roads may also be affected depending on vehicle frequency and speed. Census data indicate that desert tortoise numbers decline as vehicle use increases and that tortoise sign increases with increased distance from roads. Additional unauthorized impacts that may occur from casual use of the access roads in the Project include unauthorized trail creation.

Removal of facilities initially would have similar impacts to those described for construction. Reclamation following closure and decommissioning may take decades. Because reestablishment of desert vegetative communities would take decades and may differ in composition than the pre-disturbance vegetative community, these *long-term* changes in the vegetative communities would alter the ecosystem's ability to sustain the same density of desert tortoise that currently occur at the site.

Adverse impacts associated with potential equipment and vehicle strikes would be reduced through implementation of APMs and mitigation measures required by BLM for protection of wildlife and other resources. APMs that would contribute to reducing potential direct impacts to the desert tortoise associated with equipment and vehicle collisions include APM-Wild-1 (desert tortoise protection measures in NEMO Plan Amendments), APM-Wild-2 (relocation of tortoises), and APM-Wild-3 (tortoise exclusion fencing). Other mitigation measures that would contribute to reducing potential direct impacts to the desert tortoise associated with equipment and vehicle collisions include MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), MM-Wild-6 (Pre-Construction Surveys), and MM-Wild-7 (Desert Tortoise Handling Requirements).

Habitat Loss or Degradation

The Proposed Action would result in *long-term* disturbance of 2,023 acres and temporary disturbance of 4 acres of desert tortoise habitat. Of this total, 1,989 acres would be located within desert tortoise exclusion fence, and would be removed from the land area available as desert tortoise habitat for a minimum of 30 years. This represents approximately 1.3 percent of the suitable tortoise habitat within the *entire* Ivanpah Valley (Ivanpah Lake) watershed (NatureServe 2012), and approximately 7 percent of the habitat with the 29,110 acre Northern Ivanpah Valley Unit (the area between I-15 and the Clark Mountains).

The numbers of tortoises identified in surveys of each of the alternative sites is presented in Table 4.22-1. As shown, the number of adult tortoises (greater than 160 millimeter mean carapace length) present in the Proposed Action area ranges from 15 to 107, with an estimated total number of 40 individuals. A larger number of subadults and juveniles (< 160 mm) will also be impacted. At the scale of the entire Eastern Mojave Recovery Unit (EMRU), the Stateline Project would directly affect 0.1 percent of desert tortoise habitat [0.5 or greater threshold (Nussear 2009)] remaining outside existing lands that are managed for conservation.

Table 4.22-1. Desert Tortoise Survey Results

	Alternative 1 (Proposed Action)	**Alternative 2**	***Revised* Alternative 3**	**Alternative 4**
Live Tortoises Observed	16	*25*	*15*	*18*
Estimated Number of Tortoises	40	*62*	*37*	*45*
Lower 95% Confidence Interval	15	*24*	*14*	*17*
Upper 95% Confidence Interval	107	*160*	*100*	*118*

The tortoises present in the project area would be identified during pre-construction surveys, and would be removed from the project area in accordance with the approved Translocation Plan. The proposed translocation areas and methodology, as well as potential impacts associated with the translocation process, are discussed in a separate subsection below. Even though the tortoises would be moved, the movement would be considered a permanent, adverse impact to approximately 40 individuals and *a long-term, adverse impact to* 2,023 acres of habitat.

Impacts to desert tortoise habitat would be reduced through implementation of APMs and mitigation measures required by BLM for protection of wildlife and other resources. APMs that would contribute to reducing potential direct and indirect impacts associated with loss or degradation of desert tortoise habitat include APM-Wild-1 (desert tortoise protection measures

in NEMO Plan Amendments), APM-Wild-2 (relocation of tortoises), APM-Wild-4 (*Integrated* Weed Management Plan), APM-Wild-6 (Dust Control), APM-Wild-8 (chemical storage), APM-Wild-9 (fuel storage), and APM-Wild-10 (Solid Waste Management). Other mitigation measures that would contribute to reducing potential direct and indirect wildlife impacts associated with desert tortoise habitat loss or degradation include MM-Air-1 (Air Quality Construction Management Plan), MM-Veg-1 (Minimize Impacts to Vegetation Communities), MM-Veg-2 (Designated Biologist), MM-Veg-3 (*Pre-Construction Soil and Plant Salvage*), MM-Veg-4 (*Integrated* Weed Management Plan), MM-Veg-5 (Revegetation of Temporary Disturbed Areas *and Project Site*), MM-Veg-6 (Streambed Alteration Agreement), MM-Water-8 (Construction SWPPP), MM-Water-9 (Storm Water Management Plan), MM-Water-10 (Spill Control and Environmental Training), MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), and MM-Wild-8 (Habitat Acquisition for Desert Tortoise).

Habitat Connectivity

The development of the Desert Stateline Solar Farm Project would potentially affect the free movement of desert tortoises within the Ivanpah Valley, and between Ivanpah Valley and adjacent habitat areas. The presence of the facility itself, as well as the supporting infrastructure of roads and other linear features, would exclude or substantially limit the access that desert tortoise have to the project site.

The proposed facility site is located within the 29,110 acre Northern Ivanpah Valley Unit. This area was designated BLM Class I desert tortoise habitat prior to the NEMO amendments, which put DWMAs in Category 1 and everything else in Category 3, but is not designated as critical habitat by the USFWS. The Northern Ivanpah Valley Unit comprises an alluvial fan that slopes gently from the Clark Mountains and Mesquite Range to the west towards Ivanpah Dry Lake in the east. At the time of the NEMO Plan amendment, this area was not included within the Ivanpah DWMA because it is separated from other desert tortoise populations by I-15 and Ivanpah Dry Lake to the east, and the Clark Mountains and Mesquite Range to the west (BLM 2002).

Knowledge of baseline conditions, especially as they relate to connectivity, is essential in determining the potential impacts of the Project. The degree of connectivity/isolation is unknown due to the absence of previous studies and available data in regard to dispersal rates across nearby barriers. A comparison of data collected to date by the USGS suggests that rates of tortoise-to-tortoise contact is less in Stateline Pass than in McCullough Pass, where similar methods have been implemented. The complete research study would be dependent upon multiple years of data collection.

Therefore, this analysis relies on two scenarios with separate assumptions for baseline conditions for connectivity. The EMRU consists of one basal genotype cluster (Las Vegas Cluster), which is separated into two finer scale clusters (South Las Vegas and Amargosa Clusters) (Hagerty and Tracey 2010). This indicates that historical dispersal between these clusters occurred, but was impaired due to naturally occurring geographic barriers of the Clark and Spring Mountain Ranges. The development of I-15 created another barrier largely closing off the western lobe of Ivanpah Valley, which is likely the greatest factor affecting the genetic interchange of this desert tortoise population.

Under the first scenario, the assumption is that the western lobe is currently isolated to the extent that any dispersal under I-15 or over the Clark Mountains is not sufficient to provide gene flow necessary to mitigate for the demographic stochasticity and genetic drift. The western lobe contains approximately 33,360 acres (52.6 square miles) of potential desert tortoise habitat [0.5

or greater threshold (Nussear 2009)], which would be reduced by approximately 6 percent to 31,200 acres (48.8 square miles) after the Project. Densities derived from full coverage and clearance surveys conducted on the Ivanpah SEGS and Stateline Project range from 7 to over 20 tortoises per square mile, which is slightly higher than the mean density calculated for the EMRU at 10.9 tortoises per square mile (USFWS 2011a). If the mean density for the EMRU is used as a conservative value, then approximately 532 adult tortoises potentially occur within the western lobe under baseline conditions. Tortoises within the Project would be translocated to areas inside the western lobe, therefore the estimated number of adult tortoises would not change with the Project; however, the density for the western lobe would increase proportionally to the size of the Project: approximately 7 percent (from 10.9 to 11.6 adult tortoises per square mile).

The average density for the western lobe is estimated to exceed the minimum density recommended in the 1994 recovery plan (10 tortoises per square mile*). The 1994 Recovery Plan (USFWS 1994) also recommended that reserves be a minimum of 1,000 square miles (640,000 acres) in size. The western lobe, even without any solar projects, is only 33,000 acres in size. Therefore, this area is only about 5 percent of the recommended size needed for a preserve. Implementation of the project would reduce this to about 4.8 percent of the recommended size. Therefore, with respect to the USFWS-recommended reserve size, the project would not have any substantial effect, and would not result in changing a reserve of an acceptable size to support a viable population to one with an unacceptable size*. Ninety-four percent (94 percent) of the available habitat within the western lobe would persist following the Project. For these reasons, the Project is not expected to substantially alter viability of the population located in the western lobe of the Ivanpah Valley or result in indirect adverse effects to population viability within the greater Ivanpah Valley or Eastern Mojave Recovery Unit. Furthermore, compensatory mitigation and effectiveness monitoring completed as part of the Proposed Action would contribute to the recovery of the species.

The second scenario assumes that connectivity across the Clark Mountains and under I-15 is sufficient to allow for gene flow at an adequate rate to mitigate for demographic stochasticity and genetic drift. To evaluate the potential for the Proposed Action to affect movement of tortoises, the Applicant, in cooperation with BLM, conducted habitat modeling of Ivanpah Valley, adjacent areas, and the potential connection corridors between these areas. The modeling included evaluation of current conditions, as well as modeling of the corridors under three potential project configurations that correspond to Alternatives 1, 2, and 3. The results were documented in the Draft Regional Assessment, Stateline Solar Farm Project (BLM Case File Number CACA-48669) (Regional Assessment; NatureServe 2012).

As discussed in the Regional Assessment, desert tortoises within the Northern Ivanpah Valley Unit currently have limited connectivity to areas outside of the Unit due to the presence of both natural and anthropogenic features. To the southwest, west, and northwest of the Northern Ivanpah Valley Unit, the rocky slopes and higher elevation of the Clark Mountains and Mesquite Range act as a barrier to tortoise migration. The Regional Assessment evaluates the potential for Stateline Pass, between the Clark Mountain Range and the Stateline Hills, to act as a corridor for tortoise connectivity through this area to the northwest, into Mesquite Valley. To the north, a narrow corridor, now occupied by the town of Primm, once acted as a corridor for connectivity between the Ivanpah Valley in California and Ivanpah Valley in Nevada. However, this corridor is now occupied by I-15 and the development of Primm. In addition, a 22,000 acre fenced area known as the Large-Scale Translocation Site (LSTS) is located immediately north of Primm, and effectively blocks the remainder of this corridor. Removal of the fencing around the LSTS in Nevada west of I-15, which is planned for the future, will improve connectivity between and among desert tortoise populations. Ivanpah Dry Lake to the east as well as I-15 to the southeast and south effectively constrains movements of desert tortoise to their current area within the Northern Ivanpah Valley Unit. While there are culverts that pass beneath I-15

and the Union Pacific rail line to allow some passage of desert tortoise into the adjacent areas, opportunities for movement into surrounding areas within the Ivanpah Basin are limited.

The Regional Assessment discussed the observation that the Stateline Pass area *is important* for regional connectivity for desert tortoise *because it is one of the few potential corridors for connectivity in this basin surrounded by mountain ranges.* The Regional Assessment noted, however, that while the modeling for connectivity through the Stateline Pass showed a high potential for connectivity, this area is narrow in places and may be less than the area hypothesized by the USFWS (USFWS 2011a, USFWS 2012) as being necessary for desert tortoise habitat linkages. *The Biological Opinion for the Stateline project (USFWS 2013) acknowledged that tortoises may ocassionally move through Stateline Pass, but that Stateline Pass was unlikely to support a long-term population of tortoises, and does not provide a demographic connection between Ivanpah Valley and areas outside of Ivanpah Valley.*

Areas south of the Desert Stateline Solar Farm (e.g. between Cima Dome and the New York Mountains) were modeled as having a good potential for connectivity. However, the Regional Assessment notes that in the USFWS Biological Opinion for the Ivanpah SEGS project (USFWS 2011a), the width, habitat potential, infrastructure and other factors severely limited the area's potential as a linkage to other desert tortoise populations. In addition, this area is on the opposite side of I-15 from the Northern Ivanpah Valley Unit, limiting the potential for connectivity to this area.

Based on these factors, while there would be a loss of desert tortoise habitat with the construction of the Desert Stateline Solar Farm, the project would not significantly reduce the existing connectivity between the Northern Ivanpah Valley Unit and other adjacent populations. Although that connectivity is poor, and would remain poor, it would be minimally affected by the project. In particular, the potential connectivity via the Stateline Pass into the Mesquite Valley would be reduced by the lack of tortoises occupying the project area, and the reduction of space due to the proximity of the project to Ivanpah SEGS. Due to its distance from I-15, the project would not affect the potential for mobility of desert tortoises into adjacent local areas through the use of culverts beneath I15 or the Union Pacific Railroad line. *The Biological Opinion concurred that the Project is not likely to measurably affect connectivity with Ivanpah Valley (USFWS 2013).*

Within the Northern Ivanpah Valley Unit itself, the location of the Proposed Action would affect mobility of tortoise, especially on the west side between the facility and Ivanpah SEGSs, and between the facility and the topographic feature known as Metamorphic Hill, including a corridor of approximately 5,000 feet of habitat south of Ivanpah SEGS, between Ivanpah SEGS and I-15. The connectivity south of Ivanpah SEGS is currently reduced by the presence of translocation pens, but these will be removed within five years, and that area would again be available as habitat.

The site configuration for the Stateline Solar Farm Proposed Action (Alternative 1) is located directly abutting Metamorphic Hill on the west side, and almost directly abutting Ivanpah Dry Lake on the east side. Tortoises have been documented on Metamorphic Hill, and the hill is not considered a barrier to connectivity. However, at that location, the fence of the project and the fence of Ivanpah SEGS would be within *4,225* feet of each other, reducing the width of this corridor and therefore further reducing connectivity east of Metamorphic Hill. Should the Proposed Action be implemented, the potential for tortoises to *use this corridor* would be restricted on the east side, between Metamorphic Hill and Ivanpah Dry Lake. The east-west travel of tortoises on the north side of Ivanpah SEGS and the Proposed Action would also be constricted from the present situation. A habitat corridor between the toe of slope of the Clark Mountain Range of fairly narrow width would allow tortoises to get to the Stateline Pass from areas to the west and south of Ivanpah SEGS. Under the Proposed Action, this corridor would be approximately 1,875 feet wide.

Predation by Ravens, Coyotes, and Other Predators

Human activities in the project area potentially provide food or other attractants in the form of trash, litter, or water, which draw unnaturally high numbers of tortoise predators such as the common raven, kit fox, and coyote. Common raven populations in some areas of the Mojave Desert have increased 1,500 percent from 1968 to 1988 in response to expanding human use of the desert (Boarman 2002). Since ravens were scarce in this area prior to 1940, the current level of raven predation on juvenile desert tortoises is considered to be an unnatural occurrence (BLM 1990, USFWS 2008).

In addition to ravens, feral dogs have emerged as major predators of the tortoise. Dogs may range several miles into the desert and have been found digging up and killing desert tortoises (USFWS 1994; Evans 2001). Dogs brought to the project site with visitors may harass, injure, or kill desert tortoises, particularly if allowed off leash to roam freely in occupied desert tortoise habitat.

Construction and operation of the project would increase raven and coyote presence in the project area. Ravens depend on human encroachment to expand into areas where they were previously absent or in low abundance. Ravens habituate to human activities and are subsidized by the food and water, as well as roosting and nesting resources that are introduced or augmented by human encroachment. The Ivanpah Valley currently includes the casinos at Primm and the Primm Valley Golf Club that provide food, water features, and roosting/nesting substrates (buildings, signs, lamps, and utility poles) that otherwise would be unavailable. This development adjacent to the project area provides year-round water and trash subsidies for the raven, as well as nesting opportunities.

Small mammal, fox, coyote, rabbit, lizard, snake, and tortoise road kill along I-15 and other local roads also provides an additional attractant and subsidy for opportunistic predators/scavengers such as ravens. Road kills would mount with increased project construction and operations traffic, further exacerbating the raven/predator attractions and increasing desert tortoise predation levels.

Impacts associated with increased predation of desert tortoise would be reduced through implementation of APMs and mitigation measures required by BLM for protection of wildlife and other resources. APMs that would contribute to reducing the potential attraction of predators include APM-Wild-1 (desert tortoise protection measures in NEMO Plan Amendments), APM-Wild-4 (*Integrated* Weed Management Plan), APM-Wild-7 (Lighting Restrictions), and APM-Wild-10 (Solid Waste Management). Other mitigation measures that would contribute to reducing the attraction of predators include MM-Veg-4 (*Integrated* Weed Management Plan), MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), and MM-Wild-10 (Raven Management Plan). These measures would not completely avoid adverse impacts to the desert tortoise associated with predators, but they would reduce such impacts.

Silt Fencing

During construction activities at the nearby Ivanpah SEGS facility, it was found that silt fencing used on the outer boundary fence of the facility had caused the mortality of one tortoise, and of numerous snakes, lizards, and squirrels. Therefore, it is likely that a similar use of silt fencing on the outer boundary to the Proposed Action could also result in adverse impacts to desert tortoises and other wildlife. To prevent this, Mitigation Measure MM-Water-8 would prohibit silt fence from being installed on the outer perimeter fence where tortoises can come into contact with it. Silt fence would still be installed on interior fences within the area enclosed by tortoise fence.

Tortoise Translocation

Capturing, handling, and relocating desert tortoises from the proposed site after the installation of exclusion fencing could result in harassment and possibly death or injury to individual tortoises. Tortoises may die or become injured by capture and relocation if these methods are performed improperly, particularly during extreme temperatures, or if they void their bladders. Averill-Murray (2001) determined that tortoises that voided their bladders during handling had significantly lower overall survival rates (0.81-0.88) than those that did not void (0.96). If multiple desert tortoises are handled by biologists without the use of appropriate protective measures, pathogens may be spread among the tortoises, both resident and translocated animals. For those tortoise near but not within the Stateline site, removal of habitat within a tortoise's home range or segregating individuals from their home range with a fence would likely result in displacement stress that could result in loss of health, exposure, increased risk of predation, increased intraspecific competition, and death. Tortoises moved outside their home ranges would likely attempt to return to the area from which they were moved, therefore making it difficult to isolate them from the potential adverse effects associated with project construction.

The risks and uncertainties of translocation to desert tortoise are well recognized in the desert tortoise scientific community. The Desert Tortoise Recovery Office (DTRO) Science Advisory Committee has made the following observation regarding desert tortoise translocations (DTRO 2009, p. 2):

"As such, consensus (if not unanimity) exists among the Science Advisory Committee and other meeting participants that translocation is fraught with long-term uncertainties, notwithstanding recent research showing short-term successes, and should not be considered lightly as a management option. When considered, translocation should be part of a strategic population augmentation program, targeted toward depleted populations in areas containing "good" habitat. The Science Advisory Committee recognizes that quantitative measures of habitat quality relative to desert tortoise demographics or population status currently do not exist, and a specific measure of "depleted" (e.g., ratio of dead to live tortoises in surveys of the potential translocation area) was not identified. Augmentations may also be useful to increase less depleted populations if the goal is to obtain a better demographic structure for long-term population persistence. Therefore, any translocations should be accompanied by specific monitoring or research to study the effectiveness or success of the translocation relative to changes in land use, management, or environmental condition."

The Applicant has developed a Translocation Plan (First Solar *2013d*) to evaluate potential locations for translocation of tortoises from the project site. The potential locations for the recipient sites were selected using criteria from the *Translocation of Mojave Desert Tortoises from Project Sites: Plan Development Guidance* (USFWS 2011b). These criteria include:

- Habitat suitable for desert tortoise at all life stages;
- Disease prevalence of less than 20 percent;
- Located at least 6.2 miles from major unfenced roads or highways, unless roads are protected by exclusion fencing;
- Located within 24.9 miles of the project site;
- Linked by connectivity with the project site, to ensure that the project site and recipient site populations are genetically similar;
- Areas where tortoise populations have been depleted or extirpated;
- Contain no other rights-of-way or facilities detrimental to the tortoise; and
- Will be managed for conservation in the future so that future projects will not impact the site.

In addition to the above criteria specified by USFWS, the Applicant considered additional criteria, as follows:

- Locations that would support a tortoise density of no more than 15 adult tortoises per square mile following translocation (based on USFWS translocation guidance for the Eastern Mojave Recovery Unit);
- Proximity to home range on the project site;
- Risk of increased predation in the recipient site;
- Comparison of baseline disease prevalence between project and recipient sites;
- Existing tortoise densities and distributions;
- Similarity of habitat to home range; and
- Site access.

To support the development of potential alternative sites, the Applicant conducted tortoise surveys within several potential sites during 2011 and 2012, and also conducted vegetation surveys to establish habitat characteristics in early 2012. Other studies provide information to support the identification of sites. The Regional Assessment (NatureServe 2012) evaluated the potential for connectivity between the project site and adjacent areas. The Regional Assessment is being supplemented in the spring of 2012 by additional connectivity studies by the USGS. In addition, results from ongoing disease and contaminant exposure studies would be used to support selection of an appropriate recipient site.

Other Potential Indirect Impacts

Other potential indirect effects to the desert tortoise could include:

- An increase of weedy plants, especially non-native grasses, in the Action Area could lead to increase fire frequency in desert habitat leading to habitat degradation and desert tortoise mortality; and
- Indirect effects could also occur from increased noise, lighting, and dust in areas outside the direct effects area.

Implementing the avoidance, minimization and mitigation measures and the Project-related Best Management Practices (BMPs) discussed in the Sections 2.3 to 2.7 of the BA would reduce the area and intensity of these effects; however, the Project would still result in indirect adverse effects to desert tortoise through the potential for harm (50 CFR 17.3). The translocation recipient site(s) includes a maximum of 9,050 acres of desert tortoise habitat that would be potentially subjected to indirect effects resulting from the addition of translocated tortoises and required monitoring per the USFWS translocation guidelines (USFWS 2011b). The translocation control site includes approximately 5,000 acres of desert tortoise habitat that will be potentially subjected to indirect effects resulting from the required monitoring per the USFWS translocation guidelines (USFWS 2011b).

Banded Gila Monster

Gila monsters were not detected during field surveys, but suitable habitat exists on Metamorphic Hill and the Clark Mountains in the vicinity of the Project area (First Solar *2013e*). This species is difficult to detect and cannot be assumed to be absent based on the absence of observations. If present, this species may be harmed during surface disturbance activities. Construction activities could also result in direct mortality, injury, or harassment of individuals as

a result of encounters with vehicles or heavy equipment. While relocation of banded Gila monster may temporarily remove the lizard from the construction area, this species shows high fidelity to its original site. Tortoise fencing may provide exclusion protection, though that has not been documented.

Construction of the Project would disturb 2,023 acres that might provide cover, foraging, and breeding habitat for banded Gila monsters. If present within the project area, adverse impacts to individuals are probable. Operational impacts would be comparable to those experienced by other reptiles within the project area as described above for wildlife resources. Removal of facilities initially would have similar impacts to those described for construction. Reclamation following closure and decommissioning may take decades. Because reestablishment of desert vegetative communities would take decades and may differ in composition than the pre-disturbance vegetative community, these *long-term* changes in the vegetative communities would alter the ecosystem's ability to sustain the same numbers of banded Gila monster that potentially currently occur at the site. Given the solitary and secretive habits of the banded Gila monster, impacts to individuals and the ability of any nearby populations to recolonize the site in the future is speculative.

Based on the low probability of occurrence within the site, the project would not likely adversely affect banded Gila monster.

Migratory Bird Treaty Act (MBTA) and Other Bird Species

The loss of active migratory bird nests or young is regulated by the federal Migratory Bird Treaty Act and Fish and Game Code section 3503. The MBTA provides that it is unlawful to "*pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatsoever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention . . . for the protection of migratory birds . . . or any part, nest, or egg of any such bird*" (16 United States Code [U.S.C.] 703).

Direct and indirect impacts to bird species for construction would be similar to those impacts described above, including loss of habitat quantity and quality, potential impairment within movement corridors, mortality due to vehicle/bird collisions, and indirect impacts from construction and increased human activity levels. If surface disturbance activities occur during the breeding season for passerines, raptors, and other summer avian residents (approximately March through July), nest or territory abandonment or the loss of eggs or young (loss of productivity) for the breeding season could result. Impacts to nesting birds would depend on the nest location relative to the proposed disturbance area, the phase of the breeding period, and the level and duration of the disturbance.

Golden Eagle

The Proposed Action occurs in the distribution range of golden eagles and is within 10 miles of 12 nesting territories (7 of the 12 territories were determined to be active during the 2010 golden eagle nest surveys; WRI 2010). The closest active nest is approximately 2 miles to the northwest of the project site, near the Umberci Mine (First Solar *2013e*). Although no golden eagle nest sites occur within the *Project Study Area,* the project site is located within foraging distance from the identified nests.

Potential direct impacts to breeding eagles as a result of construction and operation activities could include injury or mortality due to vehicle collisions, abandonment of a breeding territory or

nest site, or the potential loss of eggs or young, which would reduce productivity for that breeding season, if present. Direct impacts also would include the *long-term* reduction of approximately 2,023 acres of potential foraging habitat associated with development of the project. Development of the project would result in an incremental increase in noise and human presence, and these could cause an indirect impact to golden eagles. The project would also include a 2.3 mile long gen-tie transmission line, which would present a potential collision hazard.

Potential impacts to golden eagles would be reduced through implementation of APMs and mitigation measures required by BLM for protection of wildlife and other resources. APMs that would contribute to reducing potential direct impacts to golden eagles include MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), and MM-Wild-11 (Bird and Bat Conservation Strategy, *which includes the required components of* an Eagle Conservation Plan).

In accordance with BLM Instruction Memorandum 2010-156 dated July 9, 2010, the BLM made a determination that the project is not likely to result in the take of golden eagles not to disrupt essential breeding behavior. This conclusion, and the supporting rationale, were provided to the USFWS in a letter dated April 22, 2013. The letter summarized observed golden eagle activity in the vicinity since 2010, and concluded that the existing projects in that area (Ivanpah SEGS, Kern River Lateral gas line, and EITP transmission line) had not affected behavior. The letter also summarized the Applicant's commitments for conservation measures, as specified in their Bird and Bat Conservation Strategy, and concluded that the document included the same essential elements as an Eagle Conservation Plan.

Burrowing Owl

Burrowing owls have been observed within the vicinity of the project area, and suitable breeding habitat is present throughout the Project Study Area. During the focused surveys, *two live burrowing owls were identified in the Project Study Area, with one being located within the Alternative 1 footprint* (First Solar *2013e*). The most recent surveys *in 2011* identified two burrows, with sign, within the Proposed Action footprint. If present, direct and indirect impacts to the burrowing owl would be the same as discussed above for golden eagles. There could be a direct take of an active nest, if the owls are nesting. Direct impacts also would include the *long-term* reduction of approximately 2,023 acres of potential foraging and nesting habitat associated with development of the project. Development of the project would result in an incremental increase in noise and human presence, and these could cause an indirect impact to burrowing owls. The project would also include a 2.3 mile long gen-tie transmission line, which would present a potential collision hazard.

Impacts to burrowing owls would be reduced through implementation of APMs and mitigation measures required by BLM for protection of wildlife and other resources. APMs that would contribute to reducing potential direct impacts to burrowing owls include APM-Wild-5 (*bird and bat conservation measures*). Other mitigation measures that would contribute to reducing potential direct impacts to burrowing owls include MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), MM-Wild-11 (Bird and Bat Conservation Strategy), MM-Wild-12 (Seasonal Vegetation Removal Restrictions*), and MM-Wild-16 (Burrowing Owl Mitigation Plan).*

Northern Harrier

There are no formal survey protocols for the northern harrier; however, observations of northern harriers were recorded during surveys for other species between 2008 and 2012, and during seasonal avian point counts since 2010. One individual was observed outside the Study Area (First Solar *2013e*). Nesting habitat within the Study Area is limited.

If present, direct and indirect impacts to the northern harrier would be the same as discussed above for golden eagles. Direct impacts also would include the *long-term* reduction of approximately 2,023 acres of potential foraging habitat associated with development of the project. Development of the project would result in an incremental increase in noise and human presence, and these could cause an indirect impact to the northern harrier. The project would also include a 2.3 mile long gen-tie transmission line, which would present a potential collision hazard.

Impacts to the northern harrier would be reduced through implementation of APMs and mitigation measures required by BLM for protection of wildlife and other resources. APMs that would contribute to reducing potential direct impacts to the northern harrier include APM-Wild-5 (*bird and bat conservation measures*). Other mitigation measures that would contribute to reducing potential direct impacts to the northern harrier include MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), MM-Wild-11 (Bird and Bat Conservation Strategy), and MM-Wild-12 (Seasonal Vegetation Removal Restrictions).

Prairie Falcon

Prairie falcons were observed within the Study Area in 2008 and 2010; however, nesting habitat does not exist within the Study Area. If present, direct and indirect impacts to the migrating and foraging falcons would be the same as discussed above for golden eagles. Direct impacts also would include the *long-term* reduction of approximately 2,023 acres of potential foraging habitat associated with development of the project. Development of the project would result in an incremental increase in noise and human presence, and these could cause an indirect impact to prairie falcons. The project would also include a 2.3 mile long gen-tie transmission line, which would present a potential collision hazard.

Impacts to the prairie falcon would be reduced through implementation of APMs and mitigation measures required by BLM for protection of wildlife and other resources. APMs that would contribute to reducing potential direct impacts to the prairie falcon include APM-Wild-5 (*bird and bat conservation measures*). Other mitigation measures that would contribute to reducing potential direct impacts to the prairie falcon include MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), MM-Wild-11 (Bird and Bat Conservation Strategy), and MM-Wild-12 (Seasonal Vegetation Removal Restrictions).

Loggerhead Shrike, Bendire's Thrasher, Crissal Thrasher, and Le Conte's Thrasher

Loggerhead shrike and Le Conte's thrasher were observed within the Study Area during surveys and suitable nesting and foraging habitat was identified. Bendire's thrasher and crissal thrasher were not identified during surveys, but potential nesting habitat exists within the site. If present, direct and indirect impacts to these species would be the same as discussed above for golden eagles. Direct impacts also would include the direct take of nests and *long-term* reduction of approximately 2,023 acres of potential foraging and nesting habitat associated with

development of the project. Development of the project would result in an incremental increase in noise and human presence, and these could cause an indirect impact to the loggerhead shrike, Bendire's thrasher, crissal thrasher, and Le Conte's thrasher. The project would also include a 2.3 mile long gen-tie transmission line, which would present a potential collision hazard.

Impacts to these species would be reduced through implementation of APMs and mitigation measures required by BLM for protection of wildlife and other resources. APMs that would contribute to reducing potential direct impacts to these species include APM-Wild-5 (*bird and bat conservation measures*). Other mitigation measures that would contribute to reducing potential direct impacts to these species include MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), MM-Wild-11 (Bird and Bat Conservation Strategy), and MM-Wild-12 (Seasonal Vegetation Removal Restrictions).

Mammals

Nelson's Bighorn Sheep

Surveys for golden eagles within the project area documented 41 bighorn sheep at various locations in proximity to the Project Study Area including at Devil's Peak, Devil's Canyon, Ivanpah Valley, and the Stateline Hills (WRI 2010). However, a habitat evaluation tool developed for the Desert National Wildlife Range in Nevada indicates that the majority of the Project Study Area is not defined as important bighorn sheep habitat due to low to moderate scores in the seven assessment factors (First Solar *2013e*).

In general, bighorn sheep primarily occupy mountainous terrain for habitat, using alluvial fans and washes as seasonal foraging habitat and mountain valleys as movement corridors between mountain ranges. Nelson's bighorn sheep are known to occur in the nearby Clark Mountains and on Metamorphic Hill, and could potentially use the Stateline project site as foraging habitat and possibly as a migratory corridor (Jaeger 1994).

If present, the project could reduce the availability of seasonal forage for Nelson's bighorn sheep, though the project area represents a small fraction of the total available habitat. Potential direct impacts to this species could include the incremental long-term reduction of potential forage and the incremental increase of habitat fragmentation from vegetation removal associated with construction and development activities. The project would result in the *long-term* loss of 2,023 acres associated with the project area. This anticipated loss of habitat would result in a small, incremental reduction in the amount of available habitat and is expected to have little impact on the existing desert bighorn sheep population that occurs in the project vicinity. Based on review of the literature (Jaeger 1994), fencing of the project area would reduce foraging opportunities for bighorn on the bajada. Additionally, the project would narrow the width of movement corridors between Clark Mountain and the Stateline Hills*, as well as bighorn sheep access to Metamorphic Hill. On the north side of Metamorphic Hill, the fences of the Proposed Action and Ivanpah SEGS would be separated by about 4,200 feet, limiting the corridor that sheep could use to move between the Clark Mountains and Metamorphic Hill. The narrow width of this corridor, as well as other human* disturbance, would increase stress to bighorn sheep, from dust and human activity. Stress has been shown to increase frequency of disease in some populations. *Although the project would reduce the width of the corridor associated with Metamorphic Hill, there is no evidence that use of this small, isolated feature by bighorn sheep is substantial or important to bighorn sheep within the mountains themselves.* No important desert bighorn sheep movement corridors or seasonal habitats would be directly

impacted from project activities. Therefore, impacts to desert bighorn sheep populations are expected to be low.

American Badger

American badgers were not detected within the Study Area, but suitable habitat exists. Additionally, badgers have been observed adjacent to the project area on the Ivanpah SEGS site. Construction and operation of the Project would disturb 2,023 acres of potential American badger habitat. Construction activities could kill or injure American badgers by crushing with heavy equipment, or could bury them within a den, particularly since badgers are nocturnal and undergo torpor in winter months. Construction activities could also result in disturbance or harassment of individuals. Removal of facilities initially would have similar impacts to those described for construction. Reclamation of plant communities following closure and decommissioning may take decades. Because reestablishment of desert vegetative communities would be tong-term and ultimately may differ in composition than the pre-disturbance vegetative community, the altered vegetative communities could limit the ecosystem's ability to sustain the same density of American badger that currently occur at the site. *Mitigation measure MM-Wild-15 is required to implement the Applicant';s Desert Kit Fox and American Badger Monitoring and Management Plan (First Solar 2013b), which would include pre-construction surveys and passive re-location for American badger.*

Desert Kit Fox

Desert kit foxes were not observed within the Project Study Area, but are known to be present due to the presence of burrow/den complexes and sign. Construction and operation of the Project would disturb 2,023 acres of Desert kit fox habitat. Construction activities could kill or injure kit foxes by crushing with heavy equipment, or could bury them within a den, particularly since foxes are nocturnal. Construction activities could also result in disturbance or harassment of individuals. Removal of facilities initially would have similar impacts to those described for construction. Following the erection of perimeter fencing around the solar plant site and subsequent wildlife clearance surveys, the perimeter fence would limit kit fox access to the Project site, and consequently would reduce the likelihood of injury on the site during construction. There is also a low risk that individual animals could be inadvertently injured or killed by vehicles on access roads.

In late 2011, the first known cases of canine distemper virus (CDV) were observed in desert kit foxes about 20 miles west of Blythe (more than 200 miles south of the Stateline project site) on public lands managed by the BLM and leased to Genesis Solar LLC to construct the Genesis Solar Energy Project site. CDFW believes that the outbreak originated from an infected host animal entering the site, possibly a wild or domestic dog, American badger, or other carnivore. The rapid spread of CDV within the kit fox population was facilitated by the project-related displacement of infected animals from the Genesis site into new kit fox territories. Subsequently, desert kit foxes were captured for disease testing at the First Solar Desert Sunlight, Solar Millennium Palen, Genesis Ford Dry Lake, and at Southern California Edison's Colorado River substation and CDV was identified at the two latter sites, which span a distance of about 40 miles on the I-10 corridor within the Chuckwalla Valley (CEC 2012). The CDFW Wildlife Investigations Lab continues to monitor the health of desert kit foxes and is attempting to characterize the spread and significance of the disease on regional kit fox populations.

Although the project site is not in close proximity to the area where CDV was detected, this situation may demonstrate a risk associated with displacement of Desert kit foxes from large-scale project sites such as the proposed project. To date, there has been no effort to test desert kit foxes in the project area for CDV.

The typical practice for solar projects has been to exclude desert kit foxes from project areas during pre-construction clearing of project sites by "passive relocation" methods (i.e., by closing burrows, forcing foxes to locate to new off-site burrows). In the absence of protective measures the Project may have the potential to contribute to a similar CDV outbreak by raising kit fox stress levels and causing increased susceptibility to infection, causing increased movement of diseased animals thereby increasing the spread of disease into new areas, or placing healthy kit foxes into contact with off-site infected animals (CEC 2012). Mitigation measure MM-Wild-15 is required to implement the Applicant's Desert Kit Fox and American Badger Monitoring and Management Plan (First Solar 2013b).

Special Status Bat Species

A bat habitat assessment and surveys performed in 2010 and 2011 within the full Project Study Area (Brown 2011; First Solar *2013e*) identified suitable habitat for several bat species, including pallid bats, western pipistrelles, and California leaf-nosed bats. No roost sites were located within the Project Study Area, but general areas that may serve as potential roosts and foraging sites were identified.

The Umberci Mine, located approximately 1.5 miles northwest of the Study Area, serves as a maternity colony and hibernation site for Townsend's big-eared bats (First Solar *2013e*). Over one hundred bats exited the mine on May 16, 2011 and a torpid Townsend's big-eared bat was found when the mine was entered (Brown 2011). Although not detected during echolocation surveys within the project site, this species could forage over the project area and not be detected due to their characteristically faint calls (First Solar *2013e*). Pallid bats and small-footed myotis were detected in a shallow rock cave in the foothills just north of the Project Study Area. Echolocation signals recorded near the dry lake bed suggested that pallid bats are roosting within small rock crevices on the ground and burrows throughout other portions of the Project Study Area (First Solar *2013e*).

These special status bat species may experience some loss of roosting and foraging habitat. Townsend's big-eared bats primarily roost in caves and mines, therefore construction activities would not impact roost sites for this species. These species would experience loss of foraging habitat up to 2,023 acres. Construction impacts to special status bats would be comparable to construction impacts for other avian species, including potential vehicle strikes and loss of habitat. Operational impacts to these bat species would include loss of foraging and roosting habitat; collision with communications towers, transmission lines, and other elevated structures; attraction to nighttime lighting; increased dust; increased noise and increased human activity that disrupts normal behavior; hazards within movement corridors, hampering normal movement between foraging habitat and water sources; and habitat fragmentation. Although habitats adjacent to the project may support some displaced animals, species that are at or near carrying capacity could suffer some increased mortality rates due to displacement.

Removal of facilities initially would have similar impacts to those described for construction. Reclamation following closure and decommissioning may take decades. While reestablishment of desert vegetative communities would take decades and may differ in composition than the pre-disturbance vegetative community, the reclamation of project site would incrementally increase the amount of foraging habitat available to special status bat species in the region. The absence of structures would reduce injuries and fatalities due to collision.

Impacts to bat species would be reduced through implementation of mitigation measures required by BLM for protection of wildlife and other resources. Mitigation measures that would contribute to reducing potential direct and indirect impacts to bat species include MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and

Speed Limits), MM-Wild-11 (Bird and Bat Conservation Strategy), and MM-Wild-12 (Seasonal Vegetation Removal Restrictions).

Modify Boundary of Ivanpah DWMA

Under the Proposed Action, the BLM would modify the existing Ivanpah DWMA to include approximately *23,363* acres to the north and west of I-15. The land area that would be added to the Ivanpah DWMA is shown in Table 4.22-2.

Table 4.22-2. Acreage to be Modified in Ivanpah DWMA, Alternative 1

Land Area	Acreage in Land Area
Current Ivanpah DWMA	37,280 ac
Total in Northern Ivanpah Unit	+ 29,110 ac
Ivanpah SEGS	-3,471 ac
Caltrans JPOE	-133 ac
Stateline Alternative 1	-2,143 ac
Subtotal New Acreage Added to DWMA	***23,363* ac**
Removal of Ivanpah Playa	-2,997 ac
Final Total in Modified DWMA	***57,646* ac**

This area was originally recommended for inclusion in the Ivanpah DWMA by the USFWS in the 1994 Desert Tortoise (Mojave Population) Recovery Plan (Recovery Plan), and is referred to as the Northern Ivanpah Valley Unit in the 2002 NEMO Final EIS, amendment to the California Desert Conservation Area Plan. This area was ultimately not included in the Ivanpah DWMA because it was relatively small, was separated from other desert tortoise populations in the NEMO Planning Area by I-15 and Ivanpah Dry Lake, and undergoing substantial development pressures, particularly adjacent to I-15 (BLM 2002).

Despite the relatively small, fragmented nature of this area, new information is available which supports establishing additional protections to allow the desert tortoise to persist in the western portion of Ivanpah Valley. As stated in the 1994 Recovery Plan and the NEMO Final EIS, the non-lakebed portions of the valley contain excellent quality desert tortoise habitat and support high densities of tortoises. Tortoises are distributed patchily, even within good habitat, and the area to be included in this modification supports a healthy, viable desert tortoise population.

Protocol level surveys conducted by the Applicant in the Proposed Action area, potential alternative locations, and potential translocation recipient sites reflect a viable population persisting in this area. The density of tortoises in the Proposed Action and alternative site areas ranges from 9 to 15 adult tortoises per square mile, and the density in the Perimeter Recipient Site, which would be included within the expanded DWMA, is 8 adult tortoises per square mile (First Solar *2013d*).

In addition to these comprehensive density estimates, which were not previously available, the development pressure on this area has increased substantially. Development was originally anticipated to occur only adjacent to I-15, which would have left large tracts of the valley undisturbed and enabled the valley to continue to support a viable desert tortoise population, despite the fragmentation issues. The increase in renewable energy development pressure in Ivanpah Valley is such that if the appropriate protections are not put into place, the remaining habitat may no longer be able to support the resident desert tortoise population. In addition, there is more connectivity than originally thought. As a result, movement between this population and other populations may be possible under I-15 via culverts and across Stateline Pass, through the Stateline Wilderness area into Mesquite Valley. As such, this area may not be as isolated as described in the 2002 NEMO Plan, and this population may play a more important role in the greater meta-population than previously anticipated.

The expansion of the Ivanpah DWMA to include the lands immediately north and west of Primm, Nevada, would allow the continued existence of a healthy, viable resident population of desert tortoises which have been persisting in high densities in this area despite existing fragmentation. This area would be incorporated into the existing Ivanpah DWMA and would adopt all associated land use restrictions, including:

- Cumulative new surface disturbance on public lands administered by the BLM within any desert tortoise wildlife management area shall be no more than one percent of BLM Lands. (NEMO Volume II Pg. A-5); and
- Compensation for disturbances of public lands within the desert tortoise ACEC's shall be required at the rate of five acres for each acre disturbed. (BLM 2002; NEMO Volume II Pg. A-6).

Because the purpose of the modification would be to enhance protections for the desert tortoise, the action of modifying the boundary of the DWMA would constitute a beneficial impact on the tortoise, as well as all other wildlife species discussed in this section.

4.22.3.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, and Decommissioning) are presented below based on the CEQA Significance Criteria presented in Section 4.22.2. Only those significance criteria which were determined to be relevant to the project are addressed below:

Wild-1

Construction

Construction of the Proposed Action is anticipated to result in impacts to individuals of *16* special status wildlife species that are either present, or have a moderate to high probability of being present, within the project area. Impacts would primarily occur from the permanent displacement of individuals from 2,023 acres of their current habitat by removal of vegetation and site grading, fencing of the area to preclude the return of wildlife species, and the action of the project fence in reducing connectivity between wildlife populations.

Desert Tortoise

Construction of the project would have a direct adverse effect on the desert tortoise, resulting in the permanent displacement of approximately 40 adult desert tortoises, and impacting 2,023 acres of desert tortoise habitat.

Impacts to desert tortoise individuals and habitat would be reduced through implementation of APMs and mitigation measures required for protection of wildlife and other resources. APMs that would contribute to reducing potential direct and indirect impacts associated with loss or degradation of desert tortoise habitat include APM-Wild-1 (desert tortoise protection measures in NEMO Plan Amendments), APM-Wild-2 (relocation of tortoises), APM-Wild-4 (*Integrated* Weed Management Plan), APM-Wild-6 (Dust Control), APM-Wild-8 (chemical storage), APM-Wild-9 (fuel storage), and APM-Wild-10 (Solid Waste Management). Other mitigation measures that would contribute to reducing potential direct and indirect wildlife impacts associated with desert tortoise habitat loss or degradation include MM-Air-1 (Air Quality Construction Management Plan), MM-Veg-1 (Minimize Impacts to Vegetation Communities), MM-Veg-2 (Designated Biologist), MM-Veg-3 (*Pre-Construction Soil and Plant Salvage*), MM-Veg-4 (*Integrated* Weed Management Plan), MM-Veg-5 (Revegetation of Temporary Disturbed

Areas *and Project Site*), MM-Veg-6 (Streambed Alteration Agreement), MM-Water-8 (Construction SWPPP), MM-Water-9 (Storm Water Management Plan), MM-Water-10 (Spill Control and Environmental Training), MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), and MM-Wild-8 (Habitat Acquisition for Desert Tortoise).

Banded Gila Monster

Based on the low probability of occurrence within the site, the project would not likely adversely affect banded Gila monster. Impacts would be less than significant.

Golden Eagle

The project occurs in the distribution range of golden eagles and is within 10 miles of 12 nesting territories (7 of the 12 territories were determined to be active during the 2010 golden eagle nest surveys; WRI 2010). The closest active nest is approximately 2 miles to the northwest of the project site, near the Umberci Mine (First Solar *2013e*). Although no golden eagle nest sites occur within the *Project Study Area,* the project site is located within foraging distance from the identified nests.

Potential impacts to golden eagles would be reduced through implementation of APMs and mitigation measures required for protection of wildlife and other resources. APMs that would contribute to reducing potential direct impacts to golden eagles include MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), and MM-Wild-11 (Bird and Bat Conservation Strategy, including an Eagle Conservation Plan). Implementation of the Applicant's proposed measures and mitigation measures listed would reduce impacts on the golden eagle to less than significant levels under CEQA.

Burrowing Owl

Burrowing owls have been observed within the vicinity of the project area, and suitable breeding habitat is present throughout the Project Study Area. During the focused surveys, burrowing owls were observed in 2008 and in 2011 (First Solar *2013e*). The most recent surveys identified two burrows with sign within the Proposed Action footprint.

Impacts to burrowing owls would be reduced through implementation of APMs and mitigation measures required for protection of wildlife and other resources. APMs that would contribute to reducing potential direct impacts to burrowing owls include APM-Wild-5 (*bird and bat conservation measures*). Other mitigation measures that would contribute to reducing potential direct impacts to burrowing owls include MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), MM-Wild-11 (Bird and Bat Conservation Strategy), MM-Wild-12 (Seasonal Vegetation Removal Restrictions*), and MM-Wild-16 (Burrowing Owl Mitigation Plan)*. Implementation of the Applicant's proposed measures and mitigation measures listed would reduce impacts on the burrowing owl to less than significant levels under CEQA.

Northern Harrier

There are no formal survey protocols for the northern harrier; however, observations of northern harriers were recorded during surveys for other species between 2008 and 2012, and during

seasonal avian point counts since 2010. One individual was observed outside the Study Area (First Solar *2013e*). Nesting habitat within the Study Area is limited.

Impacts to the northern harrier would be reduced through implementation of APMs and mitigation measures required for protection of wildlife and other resources. APMs that would contribute to reducing potential direct impacts to the northern harrier include APM-Wild-5 (*bird and bat conservation measures*). Other mitigation measures that would contribute to reducing potential direct impacts to the northern harrier include MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), MM-Wild-11 (Bird and Bat Conservation Strategy), and MM-Wild-12 (Seasonal Vegetation Removal Restrictions). Implementation of the Applicant's proposed measures and mitigation measures listed would reduce impacts on the northern harrier to less than significant levels under CEQA.

Prairie Falcon

Prairie falcons were observed within the Study Area in 2008 and 2010; however, nesting habitat does not exist within the Study Area.

Impacts to the prairie falcon would be reduced through implementation of APMs and mitigation measures required for protection of wildlife and other resources. APMs that would contribute to reducing potential direct impacts to the prairie falcon include APM-Wild-5 (*bird and bat conservation measures*). Other mitigation measures that would contribute to reducing potential direct impacts to the prairie falcon include MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), MM-Wild-11 (Bird and Bat Conservation Strategy), and MM-Wild-12 (Seasonal Vegetation Removal Restrictions). Implementation of the Applicant's proposed measures and mitigation measures listed would reduce impacts on the prairie falcon to less than significant levels under CEQA.

Loggerhead Shrike, Bendire's Thrasher, Crissal Thrasher, and Le Conte's Thrasher

Loggerhead shrike and Le Conte's thrasher were observed within the Study Area during surveys and suitable nesting and foraging habitat was identified. Bendire's thrasher and Crissal thrasher were not identified during surveys, but potential nesting habitat exists within the site.

Impacts to these species would be reduced through implementation of APMs and mitigation measures required for protection of wildlife and other resources. APMs that would contribute to reducing potential direct impacts to these species include APM-Wild-5 (*bird and bat conservation measures*). Other mitigation measures that would contribute to reducing potential direct impacts to these species include MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), MM-Wild-11 (Bird and Bat Conservation Strategy), and MM-Wild-12 (Seasonal Vegetation Removal Restrictions). Implementation of the Applicant's proposed measures and mitigation measures listed would reduce impacts on these species to less than significant levels under CEQA.

Nelson's Bighorn Sheep

Surveys for golden eagles within the project area documented 41 bighorn sheep at various locations in proximity to the Project Study Area including at Devil's Peak, Devil's Canyon, Ivanpah Valley, and the Stateline Hills (WRI 2010). However, a habitat evaluation tool developed for the Desert National Wildlife Range in Nevada indicates that the majority of the

Project Study Area is not defined as important bighorn sheep habitat due to low to moderate scores in the seven assessment factors (First Solar *2013e*).

No important desert bighorn sheep movement corridors or seasonal habitats would be directly impacted from project activities. Some loss of seasonal foraging habitat (i.e. utilization of spring annuals on the bajada during wet years) could occur. This is a small percentage of the foraging habitat available to the local bighorn herd. Therefore, impacts to desert bighorn sheep populations are expected to be low. Impacts would be less than significant.

American Badger

American badgers were not detected within the Study Area, but suitable habitat exists. Additionally, badgers have been observed adjacent to the project area on the Ivanpah SEGS site.

Because substantial populations of badgers are not expected in the project area, impacts to the American badger are expected to be low. Impacts would be less than significant.

Desert Kit Fox

Desert kit fox were not detected within the Study Area, but their presence is documented through the presence of burrows and other sign. An outbreak of CDV has been documented near the Genesis solar facility near Blythe, and CDFW has at least partially attributed the spread of the disease to the displacement of individuals by Genesis and other solar facilities. Although that area of outbreak is distant from the Project site, implementation of the Applicant's Desert Kit Fox and American Badger Monitoring and Management Plan, as required by mitigation measure MM-Wild-15, would require pre-construction surveys, clearing of unoccupied burrows and protection of natal burrows, and monitoring of the population for CDV. No impacts would be expected to occur, and monitoring in accordance with MM-Wild-15 would ensure that impacts would be less than significant.

Special Status Bat Species

A bat habitat assessment and surveys performed in 2010 and 2011 within the full Project Study Area (Brown 2011; First Solar *2013e*) identified suitable habitat for several bat species, including pallid bats, western pipistrelles, and California leaf-nosed bats. No roost sites were located within the Project Study Area, but general areas that may serve as potential roosts and foraging sites were identified.

The Umberci Mine, located approximately 1.5 miles northwest of the Study Area, serves as a maternity colony and hibernation site for Townsend's big-eared bats (First Solar *2013e*). Over one hundred bats exited the mine on May 16, 2011 and a torpid Townsend's big-eared bat was found when the mine was entered (Brown 2011). Although not detected during echolocation surveys within the project site, this species could forage over the project area and not be detected due to their characteristically faint calls (First Solar *2013e*). Pallid bats and small-footed myotis were detected in a shallow rock cave in the foothills just north of the Project Study Area. Echolocation signals recorded near the dry lake bed suggested that pallid bats are roosting within small rock crevices on the ground and burrows throughout other portions of the Project Study Area (First Solar *2013e*).

Impacts to bat species would be reduced through implementation of mitigation measures required for protection of wildlife and other resources. Mitigation measures that would contribute to reducing potential direct and indirect impacts to bat species include MM-Wild-1

(Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), MM-Wild-11 (Bird and Bat Conservation Strategy), and MM-Wild-12 (Seasonal Vegetation Removal Restrictions). Implementation of the Applicant's proposed measures and mitigation measures listed would reduce impacts on these species to less than significant levels under CEQA.

Operation and Maintenance

Operations of the Proposed Action could potentially result in impacts to individuals of *16* special status wildlife species that are either present, or have a moderate to high probability of being present, within the project area. Operations and maintenance activities would occur within the fenced project area, and would be limited in scope. Therefore, direct impacts to individuals during operations would not be expected to be substantial. Impacts associated with the permanent displacement of individuals from 2,023 acres of their current habitat by removal of vegetation and site grading, fencing of the area to preclude the return of wildlife species, and the action of the project fence in reducing connectivity between wildlife populations would continue throughout the operational period.

Desert Tortoise

Operations would not likely have a direct adverse effect on the desert tortoise, because project activities would occur within the fenced exclusion area.

Impacts to desert tortoise individuals and habitat would be reduced through implementation of APMs and mitigation measures required for protection of wildlife and other resources. APMs that would contribute to reducing potential direct and indirect impacts associated with loss or degradation of desert tortoise habitat include APM-Wild-1 (desert tortoise protection measures in NEMO Plan Amendments), APM-Wild-4 (*Integrated* Weed Management Plan), APM-Wild-6 (Dust Control), APM-Wild-8 (chemical storage), APM-Wild-9 (fuel storage), and APM-Wild-10 (Solid Waste Management). Other mitigation measures that would contribute to reducing potential direct and indirect wildlife impacts associated with desert tortoise habitat loss or degradation include MM-Air-3 (Operations Emission Reductions), MM-Veg-1 (Minimize Impacts to Vegetation Communities), MM-Veg-2 (Designated Biologist), MM-Veg-3 (*Pre-Construction Soil and Plant Salvage*), MM-Veg-4 (*Integrated* Weed Management Plan), MM-Veg-5 (Revegetation of Temporary Disturbed Areas *and Project Site*), MM-Veg-6 (Streambed Alteration Agreement), MM-Water-9 (Storm Water Management Plan), MM-Water-10 (Spill Control and Environmental Training), MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), and MM-Wild-8 (Habitat Acquisition for Desert Tortoise). Implementation of the Applicant's proposed measures and mitigation measures listed would reduce impacts on the desert tortoise to less than significant levels under CEQA.

Banded Gila Monster

Based on the low probability of occurrence within the site, the project would not likely adversely affect banded Gila monster. Impacts would be less than significant.

Golden Eagle

The project occurs in the distribution range of golden eagles and is within 10 miles of 12 nesting territories (7 of the 12 territories were determined to be active during the 2010 golden eagle nest surveys; WRI 2010). The closest active nest is approximately 2 miles to the northwest of the project site, near the Umberci Mine (First Solar *2013e*). Although no golden eagle nest sites occur within the *Project Study Area,* the project site is located within foraging distance from the identified nests.

Potential impacts to golden eagles would be reduced through implementation of APMs and mitigation measures required for protection of wildlife and other resources. APMs that would contribute to reducing potential direct impacts to golden eagles include MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), and MM-Wild-11 (Bird and Bat Conservation Strategy, including an Eagle Conservation Plan). Implementation of the Applicant's proposed measures and mitigation measures listed would reduce impacts on the golden eagle to less than significant levels under CEQA.

Burrowing Owl

Burrowing owls have been observed within the vicinity of the project area, and suitable breeding habitat is present throughout the Project Study Area. During the focused surveys, burrowing owls were observed in 2008 and in 2011 (First Solar *2013e*). The most recent surveys identified two burrows with sign within the Proposed Action footprint. Burrowing owls present in the project area would be removed during construction, and would likely not return during operations due to the removal of suitable habitat. Therefore, impacts are not expected during operations.

Impacts to burrowing owls would be reduced through implementation of APMs and mitigation measures required for protection of wildlife and other resources. APMs that would contribute to reducing potential direct impacts to burrowing owls include APM-Wild-5 (*bird and bat conservation measures*). Other mitigation measures that would contribute to reducing potential direct impacts to burrowing owls include MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), MM-Wild-11 (Bird and Bat Conservation Strategy*), and MM-Wild-16 (Burrowing Owl Mitigation Plan)*. Implementation of the Applicant's proposed measures and mitigation measures listed would reduce impacts on the burrowing owl to less than significant levels under CEQA.

Northern Harrier

There are no formal survey protocols for the northern harrier; however, observations of northern harriers were recorded during surveys for other species between 2008 and 2012, and during seasonal avian point counts since 2010. One individual was observed outside the Study Area (First Solar *2013e*). Nesting habitat within the Study Area is limited.

Impacts to the northern harrier would be reduced through implementation of APMs and mitigation measures required for protection of wildlife and other resources. APMs that would contribute to reducing potential direct impacts to northern harrier include APM-Wild-5 (*bird and bat conservation measures*). Other mitigation measures that would contribute to reducing potential direct impacts to northern harrier include MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), and MM-Wild-11 (Bird and Bat Conservation Strategy). Implementation of the Applicant's proposed

measures and mitigation measures listed would reduce impacts on the northern harrier to less than significant levels under CEQA.

Prairie Falcon

Prairie falcons were observed within the Study Area in 2008 and 2010; however, nesting habitat does not exist within the Study Area.

Impacts to the prairie falcon would be reduced through implementation of APMs and mitigation measures required for protection of wildlife and other resources. APMs that would contribute to reducing potential direct impacts to the prairie falcon include APM-Wild-5 (*bird and bat conservation measures*). Other mitigation measures that would contribute to reducing potential direct impacts to prairie falcon include MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), and MM-Wild-11 (Bird and Bat Conservation Strategy). Implementation of the Applicant's proposed measures and mitigation measures listed would reduce impacts on the prairie falcon to less than significant levels under CEQA.

Loggerhead Shrike, Bendire's Thrasher, Crissal Thrasher, and Le Conte's Thrasher

Loggerhead shrike and Le Conte's thrasher were observed within the Study Area during surveys and suitable nesting and foraging habitat was identified. Bendire's thrasher and Crissal thrasher were not identified during surveys, but potential nesting habitat exists within the site.

Impacts to these species would be reduced through implementation of APMs and mitigation measures required for protection of wildlife and other resources. APMs that would contribute to reducing potential direct impacts to these species include APM-Wild-5 (*bird and bat conservation measures*). Other mitigation measures that would contribute to reducing potential direct impacts to these species include MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), and MM-Wild-11 (Bird and Bat Conservation Strategy). Implementation of the Applicant's proposed measures and mitigation measures listed would reduce impacts on these species to less than significant levels under CEQA.

Nelson's Bighorn Sheep

Surveys for golden eagles within the project area documented 41 bighorn sheep at various locations in proximity to the Project Study Area including at Devil's Peak, Devil's Canyon, Ivanpah Valley, and the Stateline Hills (WRI 2010). However, a habitat evaluation tool developed for the Desert National Wildlife Range in Nevada indicates that the majority of the Project Study Area is not defined as important bighorn sheep habitat due to low to moderate scores in the seven assessment factors (First Solar *2013e*).

No important desert bighorn sheep movement corridors or seasonal habitats would be directly impacted from project activities. Therefore, impacts to desert bighorn sheep populations are expected to be low. Impacts would be less than significant.

American Badger

American badgers were not detected within the Study Area, but suitable habitat exists. Additionally, badgers have been observed adjacent to the project area on the Ivanpah SEGS site.

Because substantial populations of badgers are not expected in the project area, impacts to the American badger are expected to be low. Impacts would be less than significant.

Desert Kit Fox

Desert kit fox were not detected within the Study Area, but their presence is documented through the presence of burrows and other sign. An outbreak of CDV has been documented near the Genesis solar facility near Blythe, and CDFW has at least partially attributed the spread of the disease to the displacement of individuals by Genesis and other solar facilities. Although that area of outbreak is distant from the Project site, implementation of the Applicant's Desert Kit Fox and American Badger Monitoring and Management Plan, as required by mitigation measure MM-Wild-15, would require pre-construction surveys, clearing of unoccupied burrows and protection of natal burrows, and monitoring of the population for CDV. No impacts would be expected to occur, and monitoring in accordance with MM-Wild-15 would ensure that impacts would be less than significant.

Special Status Bat Species

A bat habitat assessment and surveys performed in 2010 and 2011 within the full Project Study Area (Brown 2011; First Solar *2013e*) identified suitable habitat for several bat species, including pallid bats, western pipistrelles, and California leaf-nosed bats. No roost sites were located within the Project Study Area, but general areas that may serve as potential roosts and foraging sites were identified.

The Umberci Mine, located approximately 1.5 miles northwest of the Study Area, serves as a maternity colony and hibernation site for Townsend's big-eared bats (First Solar *2013e*). Over one hundred bats exited the mine on May 16, 2011 and a torpid Townsend's big-eared bat was found when the mine was entered (Brown 2011). Although not detected during echolocation surveys within the project site, this species could forage over the project area and not be detected due to their characteristically faint calls (First Solar *2013e*). Pallid bats and small-footed myotis were detected in a shallow rock cave in the foothills just north of the Project Study Area. Echolocation signals recorded near the dry lake bed suggested that pallid bats are roosting within small rock crevices on the ground and burrows throughout other portions of the Project Study Area (First Solar *2013e*).

Impacts to bat species would be reduced through implementation of mitigation measures required for protection of wildlife and other resources. Mitigation measures that would contribute to reducing potential direct and indirect impacts to bat species include MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), MM-Wild-11 (Bird and Bat Conservation Strategy), and MM-Wild-12 (Seasonal Vegetation Removal Restrictions). Implementation of the Applicant's proposed measures and mitigation measures listed would reduce impacts on these species to less than significant levels under CEQA.

Decommissioning

The Proposed Action would not result in additional impact to any special status wildlife species during decommissioning. Decommissioning activities would occur within the fenced project area, and therefore direct impacts to individuals would not be expected to be substantial. Decommissioning activities would also be subject to the same Applicant Proposed Measures and mitigation measures as construction. Implementation of the Applicant's proposed measures and mitigation measures listed would reduce impacts on wildlife to less than significant levels under CEQA.

Wild-2

Construction, Operations and Maintenance, and Decommissioning

Desert Tortoise

Construction of the project would result in the fencing of an area of 2,023 acres, excluding desert tortoises from access to the project area. The action of fencing the project site could affect the free movement of desert tortoises within the Ivanpah Valley, and between Ivanpah Valley and adjacent habitat areas. The presence of the facility itself, as well as the supporting infrastructure of roads and other linear features, would exclude or substantially limit the access that desert tortoise have to those areas. This fencing would remain in place throughout the operations and decommissioning period and those phases of the project would have no additional effect on wildlife movement or corridors. Therefore, the impact of the project with respect to CEQA Criterion Wild-2 would be the same for construction, operations, and decommissioning.

As discussed in Section 4.22.3.1, the 29,110 acre Northern Ivanpah Valley Unit already has limited connectivity with the eastern side of Ivanpah Valley, and with areas outside of Ivanpah Valley, due to the presence of both natural and anthropogenic features. The only potentially active corridor is Stateline Pass, between the Clark Mountain Range and the Stateline Hills, which may provide a mechanism for tortoises in Ivanpah Valley to connect with those in Mesquite Valley to the northwest. The Regional Assessment noted that the footprint in the Proposed Action would not affect Stateline Pass, and would therefore not have an impact on regional genetic connectivity. Under the Proposed Action, a corridor approximately 1,875 feet wide would remain between the northern boundary of the project and the steep slopes of the mountains near Stateline Pass. Therefore, the impact of the project on desert tortoise linkage between Ivanpah Valley and areas outside Ivanpah Valley would be less than significant.

Section 4.22.3.1 also discussed the movement of tortoises within the Northern Ivanpah Valley Unit itself. The location of the project would affect mobility of tortoises, especially on the west side between the facility and Ivanpah SEGS, and between the facility and the topographic feature known as Metamorphic Hill. Although tortoises have been documented on Metamorphic Hill, and the hill may therefore not be a barrier to connectivity, it likely reduces connectivity as compared to the open alluvial fan areas. Currently, even with the presence of the Ivanpah SEGS facility, tortoises within the Northern Ivanpah Valley Unit have free range of movement *on the east side of* Metamorphic Hill. The site configuration for the Proposed Action is located directly abutting Metamorphic Hill on the west side, and almost directly abutting Ivanpah Dry Lake on the east side. If the Proposed Action were to be implemented, the potential for tortoises to *use this corridor* would be restricted on the east side, between Metamorphic Hill and Ivanpah Dry Lake. Although the project would interfere with this established native resident wildlife corridor on the east side of Metamorphic Hill and Ivanpah SEGS, it would not affect the corridor for those same tortoise populations around the west and north sides of these features. Therefore, the impact of the project on desert tortoise linkages within the Northern Ivanpah Valley Unit would be less than significant.

4.22.4 Alternative 2: 2,385 Ac Alternative

The analysis of direct and indirect impacts included below covers construction, operations and maintenance, and decommissioning of Alternative 2. The discussion only includes an assessment of features of Alternative 2 that differ from the Proposed Action. All other wildlife impacts not specifically discussed below would be the same as those for the Proposed Action.

4.22.4.1 Direct and Indirect Impacts

Alternative 2 is conceptually similar to the Proposed Action (Alternative 1), but construction activities associated with Alternative 2 would be slightly greater than the Proposed Action due to the slightly increased acreage (2,385 acres versus 2,143 acres). The Alternative 2 footprint (Figure 2-4) would partially overlap with the land area associated with the Proposed Action (Figure 1-1) north of the Primm Valley Golf Course, but would also include a parcel on the south side of the Primm Valley Golf Course. The wildlife impacts associated with Alternative 2 would be similar, but slightly greater, than those of the Proposed Action. Construction activities would last for a slightly longer time and the bifurcated footprint would result in an additional 339 acres of *long-term* disturbance of habitat.

Desert Tortoise

Alternative 2 would result in *long-term* disturbance of 2,362 acres and temporary disturbance of 4 acres of desert tortoise habitat. Of this total, 2,328 acres would be located within desert tortoise exclusion fence, and would be removed from the land area available as desert tortoise habitat for a minimum of 30 years. The numbers of tortoises identified in surveys of each of the alternative sites was presented above in Table 4.22-1. As shown, the number of tortoises present in the Alternative 2 footprint ranges from *24* to *160*, with an estimated total number of *62* adult individuals.

The tortoises present in the project area would be identified during pre-construction surveys, and would be removed from the project area in accordance with the approved Translocation Plan. The movement would be considered a permanent, adverse impact to approximately *62* individuals and *a long-term, adverse impact to* 2,328 acres of habitat.

Alternative 2 would be subject to the same mitigation measures as discussed for Alternative 1. APMs that would contribute to reducing potential direct and indirect impacts associated with loss or degradation of desert tortoise habitat include APM-Wild-1 (desert tortoise protection measures in NEMO Plan Amendments), APM-Wild-2 (relocation of tortoises), APM-Wild-4 (*Integrated* Weed Management Plan), APM-Wild-6 (Dust Control), APM-Wild-8 (chemical storage), APM-Wild-9 (fuel storage), and APM-Wild-10 (Solid Waste Management). Other mitigation measures that would contribute to reducing potential direct and indirect wildlife impacts associated with desert tortoise habitat loss or degradation include MM-Air-1 (Air Quality Construction Management Plan), MM-Veg-1 (Minimize Impacts to Vegetation Communities), MM-Veg-2 (Designated Biologist), MM-Veg-3 (*Pre-Construction Soil and Plant Salvage*), MM-Veg-4 (*Integrated* Weed Management Plan), MM-Veg-5 (Revegetation of Temporary Disturbed Areas *and Project Site*), MM-Veg-6 (Streambed Alteration Agreement), MM-Water-8 (Construction SWPPP), MM-Water-9 (Storm Water Management Plan), MM-Water-10 (Spill Control and Environmental Training), MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), and MM-Wild-8 (Habitat Acquisition for Desert Tortoise).

The impact of Alternative 2 on connectivity of habitat for the desert tortoise would be reduced as compared to the Proposed Action because of the increased corridor width on the north side

of the project. The impact of Alternative 2 on connectivity between the Northern Ivanpah Valley Unit and Stateline Pass to the northwest would be lower than that of the Proposed Action. In the Proposed Action, a corridor of 1,875 feet in width would remain between the facility and the toe of the slope leading to Stateline Pass. Under Alternative 2, this corridor would be 4,750 feet in width. Both alternatives would result in fencing the entire area between Metamorphic Hill to the west and Ivanpah Dry Lake to the east, and would therefore affect the connection between tortoise habitat south of the facility and habitat and corridors to the north.

Burrowing Owl

Six burrowing owl burrows, with sign, were identified within the Alternative 2 footprint in the Applicant's surveys. Direct impacts would include the *long-term* reduction of approximately 2,023 acres of potential foraging and nesting habitat associated with development of the project. Development of the project would result in an incremental increase in noise and human presence, and these could cause an indirect impact to burrowing owls. The project would also include a 2.3 mile long gen-tie transmission line, which would present a potential collision hazard.

Impacts to burrowing owls would be reduced through implementation of APMs and mitigation measures required by BLM for protection of wildlife and other resources. APMs that would contribute to reducing *potential direct impacts to burrowing owls include APM-Wild-5 (bird and bat conservation measures).* Other mitigation measures that would contribute to reducing potential direct impacts to burrowing owls include MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), MM-Wild-11 (Bird and Bat Conservation Strategy), MM-Wild-12 (Seasonal Vegetation Removal Restrictions*), and MM-Wild-16 (Burrowing Owl Mitigation Plan).*

Modify Boundary of Ivanpah DWMA

Under Alternative 2, the BLM would modify the existing Ivanpah DWMA to include approximately *23,121* acres to the north and west of I-15. The land area that would be added to the Ivanpah DWMA is shown in Table 4.22-3.

Table 4.22-3. Acreage to be Modified in Ivanpah DWMA, Alternative 2

Land Area	Acreage in Land Area
Current Ivanpah DWMA	37,280 ac
Total in Northern Ivanpah Unit	+ 29,110 ac
Ivanpah SEGS	-3,471 ac
Caltrans JPOE	-133 ac
Stateline Alternative 2	-2,385 ac
Subtotal New Acreage Added to DWMA	***23,121* ac**
Removal of Ivanpah Playa	-2,997 ac
Final Total in Modified DWMA	***57,404* ac**

The impacts on wildlife associated with Alternative 2 would be the same as described for Alternative 1. Because the purpose of the modification would be to enhance protections for the desert tortoise, the action of modifying the boundary of the DWMA under Alternative 2 would constitute a beneficial impact on the tortoise, as well as all other wildlife species discussed in this section.

4.22.4.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) would be the same as described above for the Proposed Action, Alternative 1, based on the CEQA Significance Criteria presented in Section 4.22.2. With mitigation, as presented in Section 4.22.13, potential impacts of Alternative 2 would be less than significant, except for the take of a threatened species, the desert tortoise.

4.22.5 *Revised* Alternative 3: *1,685* Ac Alternative

The analysis of direct and indirect impacts included below covers construction, operations and maintenance, and decommissioning of *Revised* Alternative 3. The discussion only includes an assessment of features of *Revised* Alternative 3 that differ from the Proposed Action. All other wildlife impacts not specifically discussed below would be the same as those for the Proposed Action.

4.22.5.1 Direct and Indirect Impacts

Revised Alternative 3 is conceptually similar to the Proposed Action (Alternative 1), but would have a *smaller* footprint *of approximately 458 fewer acres (21 percent) than the Proposed Action project footprint. Revised Alternative 3 would result in a 458-acre reduction of long-term disturbance to vegetation related to site-clearing activities*. The land area associated with *Revised* Alternative 3 would partially overlap with the land area associated with the Proposed Action (Figure 1-1), but would be shifted towards the south and east.

Desert Tortoise

Revised Alternative 3 would result in *long-term* disturbance of *1,685* acres and temporary disturbance of 4 acres of desert tortoise habitat. Of this total, *1,630* acres would be located within desert tortoise exclusion fence, and would be removed from the land area available as desert tortoise habitat for a minimum of 30 years. The numbers of tortoises identified in surveys of each of the alternative sites was presented above in Table 4.22-1. As shown, the number of tortoises present in the *Revised* Alternative 3 footprint ranges from *14* to *100*, with an estimated total number of *37* adult individuals.

The tortoises present in the project area would be identified during pre-construction surveys, and would be removed from the project area in accordance with the approved Translocation Plan. The movement would be considered a permanent, adverse impact to approximately *37* adult individuals and *a long-term, adverse impact to 1,685* acres of habitat.

Revised Alternative 3 would be subject to the same mitigation measures as discussed for Alternative 1. APMs that would contribute to reducing potential direct and indirect impacts associated with loss or degradation of desert tortoise habitat include APM-Wild-1 (desert tortoise protection measures in NEMO Plan Amendments), APM-Wild-2 (relocation of tortoises), APM-Wild-4 (*Integrated* Weed Management Plan), APM-Wild-6 (Dust Control), APM-Wild-8 (chemical storage), APM-Wild-9 (fuel storage), and APM-Wild-10 (Solid Waste Management). Other mitigation measures that would contribute to reducing potential direct and indirect wildlife impacts associated with desert tortoise habitat loss or degradation include MM-Air-1 (Air Quality Construction Management Plan), MM-Veg-1 (Minimize Impacts to Vegetation Communities), MM-Veg-2 (Designated Biologist), MM-Veg-3 (*Pre-Construction Soil and Plant Salvage*), MM-Veg-4 (*Integrated* Weed Management Plan), MM-Veg-5 (Revegetation of Temporary Disturbed Areas *and Project Site*), MM-Veg-6 (Streambed Alteration Agreement), MM-Water-8 (Construction SWPPP), MM-Water-9 (Storm Water Management Plan), MM-

Water-10 (Spill Control and Environmental Training), MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), and MM-Wild-8 (Habitat Acquisition for Desert Tortoise).

The impact of *Revised* Alternative 3 on connectivity of habitat for the desert tortoise would be different than that of the Proposed Action. Both of these alternatives would reduce connectivity between the Northern Ivanpah Valley Unit and Stateline Pass to the northwest, assuming that Stateline Pass is a viable corridor. *However, Revised Alternative 3 was developed by BLM, in coordination with the Applicant, to increase the area for potential tortoise connectivity between the solar facility and Metamorphic Hill to the west, and the slope of the Clark Mountains to the north. Under Alternative 1, the facility would directly abut the rocky slopes of Metamorphic Hill. Under Revised Alternative 3, the project fenceline would be separated from the base of Metamorphic Hill by approximately 1,250 feet at its closest point. Similarly, the northern fenceline of Alternative 3 would be 3,000 feet from the slope of the Clark Mountains, as compared to 1,875 feet in Alternative 1.*

Modify Boundary of Ivanpah DWMA

Under *Revised* Alternative 3, the BLM would modify the existing Ivanpah DWMA to include approximately *23,821* acres to the north and west of I-15. The land area that would be added to the Ivanpah DWMA is shown in Table 4.22-4.

Table 4.22-4. Acreage to be Modified in Ivanpah DWMA, *Revised* Alternative 3

Land Area	Acreage in Land Area
Current Ivanpah DWMA	37,280 ac
Total in Northern Ivanpah Unit	+ 29,110 ac
Ivanpah SEGS	-3,471 ac
Caltrans JPOE	-133 ac
Stateline *Revised* Alternative 3	*-1,685* ac
Subtotal New Acreage Added to DWMA	***23,821* ac**
Removal of Ivanpah Playa	-2,997 ac
Final Total in Modified DWMA	***58,104* ac**

The impacts on wildlife associated with *Revised* Alternative 3 would be the same as described for Alternative 1. Because the purpose of the modification would be to enhance protections for the desert tortoise, the action of modifying the boundary of the DWMA under *Revised* Alternative 3 would constitute a beneficial impact on the tortoise, as well as all other wildlife species discussed in this section.

4.22.5.2 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) would be the same as described above for the Proposed Action, Alternative 1, based on the CEQA Significance Criteria presented in Section 4.22.2. With mitigation, as presented in Section 4.22.13, potential impacts of *Revised* Alternative 3 would be less than significant, except for the take of the threatened desert tortoise.

4.22.6 Alternative 4: Reduced Acreage Alternative

4.22.6.1 Direct and Indirect Impacts

The analysis of direct and indirect impacts included below covers construction, operations and maintenance, and decommissioning of Alternative 4. The discussion only includes an assessment of features of Alternative 4 that differ from the Proposed Action. All other wildlife impacts not specifically discussed below would be the same as those for the Proposed Action.

4.22.6.2 Direct and Indirect Impacts

Alternative 4 is conceptually similar to the Proposed Action, but would be placed within a different and smaller land area which comprises 1,766 acres. The land area associated with Alternative 4 would be the same as the northern portion of the bifurcated footprint of Alternative 2 (Figure 2-3). Under Alternative 4, the proposed Stateline Solar Farm would generate 218 MW (compared to 300 MW generated by Alternatives 1, 2, and 3) and would have a footprint of approximately 377 fewer acres (17 percent) than the Proposed Action project footprint. Alternative 4 would result in a 377-acre reduction of *long-term* disturbance to vegetation related to site-clearing activities.

Desert Tortoise

Alternative 4 would result in *long-term* disturbance of 1,725 acres and temporary disturbance of 4 acres of desert tortoise habitat. Of this total, 1,691 acres would be located within desert tortoise exclusion fencing, and would be removed from the land area available as desert tortoise habitat for up to 30 years. The numbers of tortoises identified in surveys of each of the alternative sites was presented above in Table 4.22-1. As shown, the number of tortoises present in the Alternative 4 footprint ranges from *17* to *118*, with an estimated total number of *45* adult individuals.

The tortoises present in the project area would be identified during pre-construction surveys, and would be removed from the project area in accordance with the approved Translocation Plan. The movement would be considered a permanent, adverse impact to approximately *45* adult individuals and *a long-term, adverse impact to* 1,691 acres of habitat.

Alternative 4 would be subject to the same mitigation measures as discussed for Alternative 1. APMs that would contribute to reducing potential direct and indirect impacts associated with loss or degradation of desert tortoise habitat include APM-Wild-1 (desert tortoise protection measures in NEMO Plan Amendments), APM-Wild-2 (relocation of tortoises), APM-Wild-4 (*Integrated* Weed Management Plan), APM-Wild-6 (Dust Control), APM-Wild-8 (chemical storage), APM-Wild-9 (fuel storage), and APM-Wild-10 (Solid Waste Management). Other mitigation measures that would contribute to reducing potential direct and indirect wildlife impacts associated with desert tortoise habitat loss or degradation include MM-Air-1 (Air Quality Construction Management Plan), MM-Veg-1 (Minimize Impacts to Vegetation Communities), MM-Veg-2 (Designated Biologist), MM-Veg-3 (*Pre-Construction Soil and Plant Salvage*), MM-Veg-4 (*Integrated* Weed Management Plan), MM-Veg-5 (Revegetation of Temporary Disturbed Areas *and Project Site*), MM-Veg-6 (Streambed Alteration Agreement), MM-Water-8 (Construction SWPPP), MM-Water-9 (Storm Water Management Plan), MM-Water-10 (Spill Control and Environmental Training), MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), and MM-Wild-8 (Habitat Acquisition for Desert Tortoise).

The impact of Alternative 4 on connectivity of habitat for the desert tortoise would be the same as for Alternative 2. Both of these alternatives would reduce connectivity between the Northern Ivanpah Valley Unit and Stateline Pass to the northwest, assuming that Stateline Pass is a viable corridor. In addition, both alternatives would result in fencing the entire area between Metamorphic Hill to the west and Ivanpah Dry Lake to the east, and would therefore affect the connection between tortoise habitat south of the facility and habitat and corridors to the north.

Modify Boundary of Ivanpah DWMA

Under Alternative 4, the BLM would modify the existing Ivanpah DWMA to include approximately *23,740* acres to the north and west of I-15. The land area that would be added to the Ivanpah DWMA is shown in Table 4.22-5.

Table 4.22-5. Acreage to be Modified in Ivanpah DWMA, Alternative 4

Land Area	Acreage in Land Area
Current Ivanpah DWMA	37,280 ac
Total in Northern Ivanpah Unit	+ 29,110 ac
Ivanpah SEGS	-3,471 ac
Caltrans JPOE	-133 ac
Stateline Alternative 4	-1,766 ac
Subtotal New Acreage Added to DWMA	***23,740* ac**
Removal of Ivanpah Playa	-2,997 ac
Final Total in Modified DWMA	***58,023* ac**

The impacts on wildlife associated with Alternative 4 would be the same as described for Alternative 1. Because the purpose of the modification would be to enhance protections for the desert tortoise, the action of modifying the boundary of the DWMA under Alternative 4 would constitute a beneficial impact on the tortoise, as well as all other wildlife species discussed in this section.

4.22.6.3 CEQA Significance Determinations

Significance conclusions for the impacts identified for each phase of the project (Construction, Operation and Maintenance, Decommissioning) would be the same as described above for the Proposed Action, Alternative 1, based on the CEQA Significance Criteria presented in Section 4.22.2. With mitigation, as presented in Section 4.22.13, potential impacts of Alternative 4 would be less than significant, except for take of the threatened desert tortoise. In addition, Alternative 4 would not result in a substantial lessening of any significant environmental impacts as compared to the other alternatives.

4.22.7 Alternative 5: No Action Alternative

4.22.7.1 Direct and Indirect Impacts

Under Alternative 5, the BLM would not approve the proposed facility and would not amend the CDCA Plan. As a result, no solar energy project would be constructed, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Since there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, no new structures or facilities would be constructed or operated on the site and no new ground disturbance would occur. As a result, none of the impacts to wildlife resources from construction, operation, or decommissioning of the project would occur.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under the No Action Alternative. Land uses associated with the Ivanpah DWMA would continue as they are today. This alternative would have no adverse impact on wildlife resources, but would also not have the beneficial impact of protecting special status wildlife species and wildlife habitat within the proposed DWMA expansion area.

4.22.7.2 CEQA Significance Determinations

Since the actions taken, or not taken, under Alternative 5 would not involve construction of a solar facility and ancillary features, there would be no wildlife impacts under Alternative 5.

4.22.8 Alternative 6: No Project, Exclude Solar Alternative

4.22.8.1 Direct and Indirect Impacts

Alternative 6 would include a finding by BLM that the site is not suitable for solar energy development, and no project would be approved. As a result, no solar energy project would be constructed on the site, and the BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Since the CDCA Plan would be amended to make the area unavailable for future solar energy development, it is expected that the site would remain in its existing condition unless another use is designated in this amendment. As a result, access to the site would not change and existing land uses would continue without any disruptions from construction of solar energy facilities. As such, this No Project alternative would have no adverse impact on wildlife resources within and adjacent to the site for the long-term, and future solar development is unlikely as the plan would be amended to identify the site as unsuitable for solar development.

Modify Boundary of Ivanpah DWMA

Under Alternative 6, the BLM would modify the existing Ivanpah DWMA to include approximately 25,506 acres to the north and west of I-15. The land area that would be added to the Ivanpah DWMA is shown in Table 4.22-6.

Table 4.22-6. Acreage to be Modified in Ivanpah DWMA, Alternative 6

Land Area	*Acreage in Land Area*
Current Ivanpah DWMA	*37,280 ac*
Total in Northern Ivanpah Unit	*+ 29,110 ac*
Ivanpah SEGS	*-3,471 ac*
Caltrans JPOE	*-133 ac*
Stateline Solar Project	*0 ac*
Subtotal New Acreage Added to DWMA	***25,506 ac***
Removal of Ivanpah Playa	*-2,997 ac*
Final Total in Modified DWMA	***59,789 ac***

The impacts on wildlife associated with Alternative 6 would be the same as described for Alternative 1. Because the purpose of the modification would be to enhance protections for the desert tortoise, the action of modifying the boundary of the DWMA under Alternative 6 would constitute a beneficial impact on the tortoise, as well as all other wildlife species discussed in this section.

4.22.8.2 CEQA Significance Determinations

Since the actions taken, or not taken, under Alternative 6 would not involve construction of a solar facility and ancillary features, there would be no wildlife impacts under Alternative 6.

4.22.9 Alternative 7: No Project, Approve Solar Alternative

4.22.9.1 Direct and Indirect Impacts

Alternative 7 would include a finding by BLM that the site is suitable for solar energy development, *although* none of the action alternatives would be approved. The Stateline Solar Farm Project would not be constructed on the project site and the project site would remain vacant in the near-term. Under this alternative, the BLM would not approve the proposed facility, but would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the site. If this were to occur, it is likely that the construction and operations impacts to wildlife resources would be similar to those identified under Alternative 1.

Modify Boundary of Ivanpah DWMA

The boundaries of the existing Ivanpah DWMA would not be modified under Alternative 7. Land uses associated with the Ivanpah DWMA would continue as they are today. This alternative would have no adverse impact on wildlife resources, but would also not have the beneficial impact of protecting special status wildlife species and wildlife habitat within the proposed DWMA expansion area.

4.22.9.2 CEQA Significance Determinations

Since the actions taken, or not taken, under Alternative 7 would not involve construction of a solar facility and ancillary features, there would be no wildlife impacts under Alternative 7.

4.22.10 Cumulative Impacts

4.22.10.1 Geographic Extent/Context

The geographic scope for the analysis of cumulative impacts related to wildlife resources is confined by the natural geographic boundaries of the region, which in turn affect the ranges of potentially impacted wildlife. In the Proposed Action area, this includes Ivanpah Valley in both California and Nevada. Wildlife ranges in this area are bounded by the Spring, Clark, Lucy Gray, and New York Mountain Ranges. This area also reflects the natural watershed boundaries that could be impacted by any of the cumulative projects.

4.22.10.2 Existing Cumulative Conditions

Ivanpah Valley in California and Nevada has undergone development since the early 1800s, which has resulted in habitat loss and fragmentation. Linear features such as the Union Pacific Railroad (in place since 1905) and I-15 have effectively fragmented habitat and eliminated the movement of terrestrial wildlife within major sections of the valley. Approximately 3,500 acres within Ivanpah Valley, California, and Ivanpah Valley, Nevada, have been developed as the Primm Resorts and the towns of Primm, Jean, and Nipton. Utility development in the area includes numerous power transmission lines, the Kern River Natural Gas and Calnev petroleum products pipelines, and the Walter Higgins Bighorn Generating Station. Mine developments in

the mountains have included the Colosseum Mine (now closed) and the Molycorp Mine (currently expanding).

The Desert Tortoise Recovery Plan (USFWS 1994) provided documentation of the regional decline in tortoise populations, and summarized the factors that have led to the declines. Table 1 of the Recovery Plan lists the following factors as leading to declines in tortoise populations:

- Urbanization;
- Effects of highways, roads, and railroads;
- Military operations;
- Energy developments;
- Human vandalism;
- Human predation for food;
- Human collection and commercial trade;
- Use of OHVs; and
- Grazing

With respect to local projects, cumulative projects could adversely impact wildlife in the following ways:

- Short-term displacement, mortality of individuals, and removal from project areas by vehicle strikes, clearance and removal by biologists, and or avoidance of noise and light during project construction;
- *Long-term* removal of habitat due to occupation of former habitat area during operations; and
- Fragmentation of habitat due to existence of linear barriers to wildlife movement.

Of these, all past, current, and reasonably foreseeable future development projects would include some component of temporary displacement and potential mortality due to construction of the project work the habitat area. For many of these projects, including transmission line and pipeline projects, restoration of the project area following construction would make these areas available again as wildlife habitat. For others, such as the Primm Resorts, Primm Valley Golf Course, Ivanpah SEGS, JPOE, Silver State Solar, the Southern Nevada Supplemental Airport, and the proposed Stateline Solar Farm, the habitat would be occupied by the project *for the long-term*, and would therefore constitute a *long-term* reduction in the habitat available to those species. Finally, the large-scale linear projects such as I-15, the Union Pacific Railway, and Desert Xpress would occupy a limited acreage of habitat, but would present permanent barriers to wildlife movement between different parts of Ivanpah Valley, or between Ivanpah Valley and adjacent areas. The large-scale non-linear projects, such as the solar facilities and the Southern Nevada Supplemental Airport, would also be of a scale large-enough to affect wildlife movement.

Other projects in the area have had a beneficial impact on wildlife. The designation of ACECs, DWMAs, Wilderness, and the Mojave National Preserve, including the expansion of the Ivanpah DWMA that is part of the Proposed Action, would effectively protect hundreds of thousands of acres from future development, and leave these lands available as undisturbed wildlife habitat *as long as their designations remain in place*. The 22,000-acre LSTS in Nevada, just north of Primm, has both a beneficial effect by protecting a large area from development, but an adverse impact by using fencing to isolate that population from connectivity with other populations, including Ivanpah Valley.

An evaluation of current and potential future conditions of tortoise habitat in the Ivanpah Watershed was recently developed in the Regional Assessment, Stateline Solar Farm Project (NatureServe 2012). The definition of the Ivanpah Watershed used for this study corresponds to the southern California portion of the overall Ivanpah Valley. The study area is bounded by Stateline Pass, Primm, the Lucy Gray Mountains, and the McCullough Range on the north, the New York Mountains on the east and southeast, Cima Dome on the south, and the Ivanpah Mountains and Clark Mountains on the west. This study used modeling tools to examine the cumulative effects of development on tortoise habitat quality and loss, and to examine the impact of development on habitat connectivity. The study approach and methodology was developed in coordination with BLM. NatureServe's Vista software was used to perform quantitative modeling of landscape condition under current conditions and a variety of potential future scenarios. The models were used to estimate the ecological integrity of tortoise habitat by calculating a landscape condition index, including the amount of habitat that meets a specified threshold of landscape condition.

Given the complexity of the factors used in the models, the Regional Assessment did not develop a single threshold value to distinguish between "impacted" and "non-impacted" lands areas. Instead, the Regional Assessment evaluated a range of habitat condition values between 0 and 1, and presented results for lands areas with a Landscape Condition of 0.7, 0.75, 0.8, and 0.85. In this range, the average condition within the 179,000 acre Ivanpah Watershed is about 0.81. For reference, areas within the solar footprints and other excluded areas were assigned a value of 0.05, and areas along roadways such as Nipton Road were assigned a value of 05. The acreage within the Ivanpah Watershed that meets the various evaluated thresholds is presented in Table *4.22-7*. This table shows that more than 92 percent of the Ivanpah Watershed meets the threshold of 0.7, with approximately 71 percent of the acreage being at or above the average condition of about 0.8.

Table *4.22-7*. Current Landscape Conditions for Desert Tortoise Habitat in Ivanpah Watershed

	Threshold = 0.7		Threshold = 0.75		Threshold = 0.8		Threshold = 0.85	
	Acres	Percent of Total Habitat	Acres	Percent of Total Habitat	Acres	Percent of Total Habitat	Acres	Percent of Total Habitat
Current Condition	164,900	92%	155,600	87%	126,900	71%	62,700	35%

Source: NatureServe (2012)

4.22.10.3 Reasonably Foreseeable Projects

Table 4.1-1 provides a list of current and reasonably foreseeable projects, including other proposed or approved renewable energy projects; various BLM authorized actions/activities, proposed or approved projects within the County's jurisdiction, and other actions/activities that the agencies consider reasonably foreseeable. Table 4.1-2 summarizes the cumulative projects that would have the potential to combine with the Proposed Action and result in cumulative impacts to transportation and access. Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA, or will do so prior to approval. Even if environmental review has not been completed for the cumulative projects described in Table 4.1-2, their effects were considered in the cumulative impacts analysis in the *PA and* EIS/EIR.

Projects in the vicinity of the proposed Stateline facility that could result potentially adverse impacts to wildlife resources include the following:

- Ivanpah SEGS
- Calnev Pipeline Expansion
- JPOE
- Southern Nevada Supplemental Airport
- First Solar Silver State Phase 2
- Desert Xpress
- EITP

Of these projects, Ivanpah SEGS has already begun construction, and the project area has already been cleared of tortoises and fenced to exclude tortoises and other wildlife. The Mountain Pass Lateral natural gas pipeline was recently completed, and one adult female tortoise died. The pipeline has been revegetated and the right-of-way is fenced to exclude vehicles.

4.22.10.4 Cumulative Impact Analysis

Construction

Potential cumulative impacts associated with the increase in vehicle traffic and use of heavy equipment would include an increase in the potential for wildlife/vehicle collisions during the construction of the proposed project, as well as other projects being constructed concurrently with the proposed project. Each project would individually result in an unquantifiable, but probably minor, reduction in wildlife populations. However, concurrent construction could provide increased threats to wildlife populations. For instance, the concurrent construction of several projects in the vicinity of the proposed project, including the Stateline Solar Farm, Ivanpah SEGS, JPOE, and Calnev pipeline would result in an increase in construction traffic using the Yates Well Road exit from I-15, as well as an increase in heavy construction equipment being used in the area. This cumulative increase in traffic and the use of heavy equipment would likely increase the potential for vehicle strikes. Each of the cumulative projects would be subject to mitigation measures similar to those required for the Proposed Action for protection of wildlife and other resources. For the Proposed Action, these include measures that require biological oversight of project activities, worker training, speed limits, pre-construction clearance surveys, and exclusion fencing.

An increase in human presence during concurrent construction of the projects would potentially increase indirect impacts to wildlife species resulting from human presence, noise, and light in the project area. Human presence, including use of open water sources, could also increase subsidies to predators. Again, because many of the projects are in relatively close proximity to each other, these effects could be additive. For species avoiding human presence, this could result in wildlife avoidance over a large area. For species attracted by human presence, it could result in an increase in the number of predators, and therefore increase in predation. Each of the cumulative projects would be subject to mitigation measures similar to those required for the Proposed Action for protection of wildlife and other resources. For the Proposed Action, these include measures that require noise and lighting limitations, and measures to reduce potential attraction of predators.

Operation and Maintenance

Operations and maintenance activities for each of the cumulative projects would involve use of vehicles for worker commuting and general maintenance. However, these activities are

expected to be very limited for each of the projects. For the solar facilities, the operational areas would have been cleared of wildlife to the extent practicable, and exclusion and security fence would have limited the potential for many wildlife species, including desert tortoise and large mammals, to be subject to vehicle collision within the project area. No additional clearing or grading activities would occur during operations of any of the projects, so there would be no additional risk of encountering burrows or nests. The potential would still exist for wildlife to be involved in vehicle collisions on the project access roads, or during maintenance trips for the various transmission lines and pipelines. Total operational employment for all projects near the Yates Well Road exit would be fewer than 20 persons, resulting in very limited commuting traffic.

Birds and bats are known to collide with communications towers, transmission lines, and other elevated structures. The cumulative projects in the area include numerous existing transmission lines, EITP, and the 2.3 mile long gen-tie line associated with the Project Action. These lines could cause injury and/or mortality as a result of injuries suffered from accidental collision or electrocution with power lines and the associated structures. Risk would be further reduced as the EITP and other new transmission lines and poles would be constructed according to standards which are designed to be avian-safe in accordance with the Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006 (APLIC 38 2006). However, collisions and electrocutions would still occur to some individuals during operations of these lines. Due to a lack of current data on eagle mortalities from collision and electrocution in the project area, it is currently unknown to what extent such incidents would have on any breeding population of golden eagles or other avian species in the area.

Decommissioning

In general, it is unlikely that decommissioning activities of the cumulative projects would overlap with each other. It is more likely that decommissioning of the Proposed Action would occur while other projects are operating, or would occur after other projects have undergone decommissioning on their own. Similar to operations, most decommissioning activities would take place within the fenced project areas, so would not have a high potential to impact wildlife species, such as desert tortoise or large mammals, which are excluded by the fence. It is expected that the impacts during decommissioning would be similar to those of construction of the Proposed Action, but would be reduced because most activities would take place within the exclusion fence or disturbed areas for those projects that are not fenced. All mitigation measures that are required during construction of the Proposed Action to avoid or minimize impacts to wildlife resources would also be required during decommissioning and reclamation activities.

Impacts to Special Status Wildlife Species

As discussed above, wildlife impacts associated with the Proposed Action and other projects can occur as a result of physical project activities (vehicle use, emissions, etc.), or from the clearing and occupation of the current habitat by project infrastructure. Impacts associated with vehicle traffic, emissions, and other factors would be specifically associated with each project's construction, operations, and decommissioning activities. However, clearing, including removal of vegetation, removal of tortoises and other wildlife, and fencing to exclude their return, would have adverse impacts by reducing the land area available as habitat for many species, and by implementing fencing that could limit connectivity between populations. These impacts would occur as soon as construction began, and would continue at the same level throughout the remainder of the construction, operations, and decommissioning phases of the project.

Therefore, these impacts would not be specific to construction, operations, or decommissioning.

Desert Tortoise

The Proposed Action would displace approximately 40 adult tortoises, based on the result of the Applicant's surveys. Estimates of the numbers of tortoises displaced by other projects are more difficult. For the Ivanpah SEGS project, the most recent point estimate in the June 2011 Biological Opinion (BO) is 156 individuals. Ivanpah SEGS relocated 75 adults and has 104 juveniles and hatchlings in pens. The total estimated in the environmental documents for other projects includes one for the JPOE, 88 for the Silver State solar projects, and 4 for EITP. The Desert Xpress EIS does not provide an estimate of the number of individuals, but based on the estimate of 1,269 acres of tortoise habitat to be disturbed in California (not all in Ivanpah Valley), and a conservative estimate of 15 individuals per square mile, this project could displace up to 30 adult individuals. The Calnev project EIS did not include tortoise surveys in critical habitat. Again, assuming 133 acres within tortoise habitat in Ivanpah Valley and 15 individuals per square mile, this project could temporarily displace 3 tortoises. Therefore, a rough estimate of the number of individuals that could be displaced by the past, present, and future projects is approximately 322 adult individuals.

The total number of tortoises present is also difficult to estimate. As reported in the Regional Assessment (NatureServe 2012), the USFWS population estimates for the Ivanpah Critical Habitat Unit ranged from 2,622 to 16,301 for the period from 2008 to 2010. Because the Northern Ivanpah Valley Unit, comprising more than 29,000 acres, is not included in the Critical Habitat Unit, the total estimate for Ivanpah Valley would be even higher. Therefore, the estimate of 322 individuals represents a maximum of approximately 12 percent of the tortoises in the area. The actual percentage is certainly much lower, and could be as low as 1 percent.

If the Perimeter Translocation Site is selected, tortoises translocated into that area could potentially be impacted by construction of the Desert Xpress project, which will pass through that area. Measures for protection of those tortoises would be specific in the Biological Opinion for that project.

Habitat Loss

The acreage of the development projects and special land designations which would contribute to cumulative wildlife impacts in the Ivanpah Valley are summarized in Table *4.22-8*. As shown in this table, a total of 18,100 acres within the area would be adversely impacted by past, current, and proposed development projects. This constitutes approximately 10 percent of the total tortoise habitat within the area. However, a large percentage of the remainder is currently, or would be, protected from future development through special land use designations. Although not all of the acreage for these areas presented in Table *4.22-8* is tortoise habitat or within Ivanpah Valley, the total acreage of habitat in the vicinity that is protected from future development is a minimum of 314,000 acres. Of this, the entire *57,646* acres of the Ivanpah DWMA, 22,000 acres of the LSTS, and a large percentage of the 168,000 acres of the Mojave National Preserve within Ivanpah Valley, comprises desert tortoise habitat. Therefore, upon implementation of the Proposed Action, the vast majority of the 179,000 acres of the tortoise habitat in the Ivanpah Watershed would be protected from future development.

Table *4.22-8*. Acreage Associated with Cumulative Projects

Project	Acreage of Habitat Affected
Development Projects	
Stateline Proposed Action	2,143
Ivanpah SEGS	3,471
Desert Xpress	1,269
Calnev Pipeline	133
Mountain Pass Lateral	104
JPOE	133
EITP	480
Southern Nevada Supplemental Airport	7,400
Silver State Solar	2,967
Total Habitat Acreage Impacted	**18,100**
Special Designation Areas	
Large-Scale Translocation Site	22,000
Clark Mountain ACEC	4,234
Ivanpah DWMA	*57,646*
Stateline Wilderness	7,000
Mojave National Preserve	168,758 (acreage in Ivanpah Valley, not all habitat)
Total Habitat Acreage Protected	***259,638***

The Regional Assessment (NatureServe 2012) evaluated the acreage of the ecological system that is compatible with current and proposed infrastructure in order to determine the magnitude of the impact of development on tortoise habitat. These results are shown in Table *4.22-9*. Although the Regional Assessment evaluated impacts to numerous different vegetation communities, Table *4.22-9* focuses on the creosote bush-white bursage scrub, since it is the preferred vegetative cover for tortoises, and is the predominant vegetation community affected by the Proposed Action. The analysis shows that the past and current projects have already affected approximately 10 percent of the creosote bush-white bursage scrub community within Ivanpah Valley. Implementation of the Proposed Action would impact an additional 5 percent of this community. These impacts, from both the current and future projects, would be adverse and *long-term* impacts to tortoise habitat.

Table *4.22-9*. Acreage of Ecological Systems Compatible with Current and Proposed Infrastructure

Habitat Type	Total in Ivanpah Watershed	Current Conditions		Alternative 1, with Cumulative Projects		Alternative 2, with Cumulative projects	
	Acres	Acres	Percent of Total Habitat	Acres	Percent of Total Habitat	Acres	Percent of Total Habitat
Desert Tortoise Habitat (USGS Model)	171,401	165,057	96%	161,646	94%	161,568	94%
Creosote Bush-White Bursage Scrub	40,221	36,200	90%	34,298	85%	34,766	86%

Source: NatureServe (2012)

Impacts to Tortoise Connectivity

The Regional Assessment also evaluated potential impacts associated with connectivity related to the Proposed Action and other projects. Several studies have documented the impact of development in Ivanpah Valley on connectivity. As already discussed, the Northern Ivanpah Valley Unit was not included within the Ivanpah DWMA at the time of the NEMO Plan amendment because it is separated from other desert tortoise populations by I-15 and Ivanpah Dry Lake to the east, and the Clark Mountains to the west (BLM 2002). Also, as documented in the Regional Assessment, the development of Primm and fencing of the LSTS have effectively removed any former connectivity that occurred between the California and Nevada sections of Ivanpah Valley. Removal of the fencing around the LSTS in Nevada west of I-15, which is planned for the future, will improve connectivity between and among desert tortoise populations. The current condition assessment shows potential connectivity over Stateline Pass to the north, between California and Nevada on the east side of Primm along the west edge of the Lucy Gray Mountains, and at the southern end of the valley through Cima Dome. The study confirmed that there was likely to be no effective connectivity through Primm, or through Mountain Pass.

The Regional Assessment concluded that the footprints of the proposed Stateline project (Alternative B in the Regional Assessment, Alternative 1 in the *PA and* EIS/EIR) and the evaluated alternative (Alternative D in the Regional Assessment and Alternative 2 in this *PA and* EIS/EIR) would not overlap with any potential connections in or out of the watershed. However, all evaluated alternatives would reduce the width of useable habitat by desert tortoise. Because tortoise connectivity is based on a continuous occupied habitat model, and not by a metapopulation dynamic model, the reduction of continuous habitat is anticipated to reduce demographic support and ultimately population connectivity, both within this Northern Unit and across the Ivanpah Valley. Although cumulative projects have impacted connectivity in Ivanpah Valley, the Proposed Action would minimally contribute to a further reduction in regional connectivity.

Banded Gila Monster

Gila monsters were not detected during field surveys, but suitable habitat exists within the project site (First Solar *2013e*). There are no known reports of gila monsters on the other sites. Based on the low probability of occurrence in the area, there would likely be no cumulative impacts on the banded Gila monster.

Golden Eagle

All of the cumulative projects, including the Proposed Action, occur within the distribution range of golden eagles. Although none of the projects are within potential nesting habitat (e.g., exposed rocky outcrops), each project is located within foraging distance from the identified nests.

The cumulative affect of the projects would be to remove vegetation, resulting in the *long-term* reduction of potential foraging habitat. As shown in Table *4.22-8*, the cumulative projects could result in temporary or *long-term* disturbance of *18,000* acres of foraging habitat. Each project would also result in an incremental increase in noise and human presence, and these could cause an indirect impact to golden eagles. The projects also include several existing transmission lines, the new EITP, and the Proposed Action's 2.3 mile long gen-tie transmission line, which would present potential collision hazards.

Each of the cumulative projects would be subject to mitigation measures similar to those required for the Proposed Action for protection of wildlife and other resources. For the Proposed Action, these include measures that would require avoidance of nesting birds and development of a Bird and Bat Conservation Strategy, which would include an Eagle Conservation Plan.

Burrowing Owl

All of the cumulative projects, including the Proposed Action, occur within the distribution range of burrowing owls. Burrowing owls have been observed within the vicinity of the project area and those of the other cumulative projects. If present, cumulative impacts to the burrowing owl would be the same as discussed above for golden eagles, except that burrowing owls may nest in the cresoste-bursage habitat, not in the rocky cliffs. As shown in Table *4.22-8*, the cumulative projects could result in temporary or *long-term* disturbance of *18,000* acres of breeding and foraging habitat. Each project would also result in an incremental increase in noise and human presence, and these could cause an indirect impact to burrowing owls. The projects also include several existing transmission lines, the new EITP, and the Proposed Action's 2.3 mile long gen-tie transmission line, which would present potential collision hazards.

Each of the cumulative projects would be subject to mitigation measures similar to those required for the Proposed Action for protection of wildlife and other resources. For the Proposed Action, these include measures that would require avoidance of nesting birds, development of a Bird and Bat Conservation Strategy, and seasonal vegetation removal restrictions.

Northern Harrier

There are no formal survey protocols for the northern harrier; however, observations of northern harriers were recorded during surveys for other species between 2008 and 2012, and during seasonal avian point counts since 2010. One individual was observed outside the Study Area (First Solar *2013e*). Nesting habitat within the Study Area is limited.

If present, cumulative impacts to the northern harrier would be the loss of foraging habitat in the winter and during migration.

Prairie Falcon

Prairie falcons were observed within the Study Area in 2008 and 2010; however, nesting habitat does not exist within the Study Area. As reported in the EIS for the Silver State project, the prairie falcon has been reported to be present in the McCullough Range, but there are no records of the species breeding in the area (Floyd and others 2007). If present, cumulative impacts to the migrating and foraging falcons would be the same as discussed above for golden eagles. As shown in Table *4.22-8*, the cumulative projects could result in temporary or *long-term* disturbance of *18,000* acres of foraging habitat. Each project would also result in an incremental increase in noise and human presence, and these could cause an indirect impact to the prairie falcon. The projects also include several existing transmission lines, the new EITP, and the Proposed Action's 2.3 mile long gen-tie transmission line, which would present potential collision hazards.

Each of the cumulative projects would be subject to mitigation measures similar to those required for the Proposed Action for protection of wildlife and other resources. For the Proposed Action, these include measures that would require avoidance of nesting birds, development of a Bird and Bat Conservation Strategy, and seasonal vegetation removal restrictions.

Loggerhead Shrike, Bendire's Thrasher, Crissal Thrasher, and Le Conte's Thrasher

Loggerhead shrike and Le Conte's thrasher were observed within the Study Area during surveys and suitable nesting and foraging habitat was identified. Bendire's thrasher and Crissal thrasher were not identified during surveys, but potential nesting habitat exists within the site. If present, cumulative impacts to these species would be the same as discussed above for golden eagles, except the thrashers and shrike do not nest on rocky cliffs. As shown in Table *4.22-8*, the cumulative projects could result in temporary or *long-term* disturbance of *18,000* acres of potential nesting habitat. Each project would also result in an incremental increase in noise and human presence, and these could cause an indirect impact to these species. The projects also include several existing transmission lines, the new EITP, and the Proposed Action's 2.3 mile long gen-tie transmission line, which would present potential collision hazards.

Each of the cumulative projects would be subject to mitigation measures similar to those required for the Proposed Action for protection of wildlife and other resources. For the Proposed Action, these include measures that would require avoidance of nesting birds, development of a Bird and Bat Conservation Strategy, and seasonal vegetation removal restrictions.

Nelson's Bighorn Sheep

In general, bighorn sheep primarily occupy mountainous terrain for habitat, using alluvial fans and washes as seasonal foraging habitat and mountain valleys as movement corridors between mountain ranges. Nelson's bighorn sheep are known to occur in the nearby Clark Mountains, and could potentially use the project areas on the alluvial fans as foraging habitat and possibly as a migratory corridor (Jaeger 1994). If present, the cumulative projects could reduce the availability of seasonal forage for Nelson's bighorn sheep, though the total project areas represent a small fraction of the total available habitat. The project would result in temporary or *long-term* disturbance of *18,000* acres of potential seasonal foraging habitat. Also, fencing of

the project areas would narrow the width of potential movement corridors between Clark Mountain and the Stateline Hills, and increased human presence could increase stress to bighorn sheep, from dust and human activity. Overall, no known important desert bighorn sheep movement corridors or seasonal habitats would be directly impacted from the Proposed Action or any of the other cumulative projects. Therefore, cumulative impacts to desert bighorn sheep populations are expected to be low.

American Badger

American badgers were not detected within the Stateline project area, but suitable habitat exists. Additionally, badgers have been observed adjacent to the project area on the Ivanpah SEGS site. If present, the cumulative projects could reduce the availability of habitat through the temporary or *long-term* disturbance of *18,000* acres of vegetation. Construction activities could kill or injure American badgers by crushing with heavy equipment, or could bury them within a den, particularly since badgers are nocturnal and undergo torpor in winter months. Construction activities could also result in disturbance or harassment of individuals.

Each of the cumulative projects would be subject to mitigation measures similar to those required for the Proposed Action for protection of wildlife and other resources. For the Proposed Action, these include measures that would require biological monitoring and worker training. These measures would reduce the potential for the cumulative projects to have direct impacts to the American badger.

Special Status Bat Species

A bat habitat assessment and surveys performed in 2010 and 2011 within the Stateline project area (Brown 2011; First Solar *2013e*) identified suitable habitat for several bat species, including pallid bats, western pipistrelles, and California leaf-nosed bats. No roost sites were located within the area, but general areas that may serve as potential roosts and foraging sites were identified. The environmental analyses of the other cumulative had similar findings.

The cumulative projects could reduce the availability of foraging habitat through the temporary or *long-term* disturbance of *18,000* acres of vegetation in the area. Construction impacts to special status bats would be comparable to construction impacts for other avian species, including potential vehicle strikes and loss of habitat. Operational impacts to these bat species would include loss of foraging and roosting habitat; collision with communications towers, transmission lines, and other elevated structures; attraction to nighttime lighting; increased dust; increased noise and increased human activity that disrupts normal behavior; hazards within movement corridors, hampering normal movement between foraging habitat and water sources; and habitat fragmentation. Each of these impacts associated with the Proposed Action would potentially be exacerbated through the concurrent construction and operation of several other projects in the area.

Each of the cumulative projects would be subject to mitigation measures similar to those required for the Proposed Action for protection of wildlife and other resources. For the Proposed Action, these include measures that would require biological monitoring, and development of a Bird and Bat Conservation Strategy.

Modify Boundary of Ivanpah DWMA

As discussed with respect to Table *4.22-8* above, BLM and other Federal actions have resulted in designations of large areas for conservation purposes, including desert tortoise protection. The combined acreage of the various ACECs, DWMAs, Mojave National Preserve, and

Wilderness areas in the Ivanpah Watershed totals more than 259,000 acres. Modification of the boundary of the existing Ivanpah DWMA would add an additional 23,000 acres, or about 8 percent, to the land area currently designated for conservation of wildlife. Therefore, the action of modifying the DWMA boundary would have a beneficial impact on wildlife resources, including the special status wildlife species identified in the areas of the Proposed Action and alternatives.

4.22.10.5 CEQA Significance Determinations

Wild-1

A total of *16* special status wildlife species (desert tortoise, banded Gila monster, golden eagle, burrowing owl, northern harrier, prairie falcon, loggerhead shrike, Bendire's thrasher, crissal thrasher, Le Conte's thrasher, Nelson's bighorn sheep, American badger, pallid bat, Townsend's big-eared bat, and small-footed myotis) are potentially present in the area of the proposed Stateline facility and other past, present, and reasonably foreseeable projects. Potential cumulative impacts to these species include mortality and injury to individuals from ground clearing and use of heavy equipment and vehicles. For instance, the concurrent construction, operation, and decommissioning activities of several projects in the vicinity of the proposed project, including the Stateline Solar Farm, Ivanpah SEGS, JPOE, EITP, Calnev pipeline, and Mountain Pass Lateral project would result in an increase in traffic using the Yates Well Road exit from I-15, as well as an increase in heavy construction equipment being used in the area. This cumulative increase in traffic and the use of heavy equipment would likely increase the potential for vehicle strikes to individuals. An increase in human presence during concurrent construction, operation, and decommissioning of the projects would also potentially increase indirect impacts to individuals resulting from human presence, noise, and light in the project area. Human presence, including use of open water sources, could also increase subsidies to predators. Again, because many of the projects are in relatively close proximity to each other, these effects could be additive. For species avoiding human presence, this could result in wildlife avoidance over a large area. For species attracted by human presence, it could result in an increase in the number of predators, and therefore increase in predation.

The total number of individuals of these species that would be impacted can only be estimated for the desert tortoise. It is estimated that implementation of the Proposed Action and other projects could displace up to 322 individuals out of a total population numbering at least 2,600. In addition, because the Proposed Action of modifying the boundary of the Ivanpah DWMA would likely preclude any other future large-scale development in the area, the number or tortoises to be directly impacted by development projects in the Valley is not likely to exceed this current estimate.

The other special status species evaluated are either likely not present on the project site (gila monster, bighorn sheep, and badger), or are highly mobile species (birds and bats) that would likely not be impacted except by avoidance of the project areas. Therefore, the numbers of individuals of these species that would be impacted cannot be determined. Because operations and decommissioning activities would occur within the same project footprint, these activities would likely not directly impact any additional special status wildlife species.

Each of the cumulative projects would be subject to mitigation measures similar to those required for the Proposed Action for protection of wildlife and other resources. For the desert tortoise, these include measures that require biological oversight of project activities, worker training, speed limits, pre-construction clearance surveys, exclusion fencing, noise and lighting limitations, and measures to reduce potential attraction of predators. Implementation of these measures for the proposed project, and similar measures that would be required for future

projects would ensure that there would no cumulative effect. Impacts of the proposed project would not be cumulatively considerable.

Similarly, mitigation measures for bird and bat species would be applied for all projects, and would include measures that would require avoidance of nesting birds and development of a Bird and Bat Conservation Strategy. With implementation of these measures, there would be no cumulative effect, and the impacts of the proposed project would not be cumulatively considerable.

Wild-2

The acreage of the development projects and special land designations which would contribute to cumulative effects to habitat in the Ivanpah Valley are summarized above in Table *4.22-8*. As shown in this table, a cumulative total of 18,100 acres of habitat within the area would be adversely impacted by past, current, and proposed development projects. This constitutes approximately 10 percent of the total habitat within the area. However, a large percentage of the remainder is currently, or would be, protected from future development through their special land use designations. Although not all of the acreage for these areas presented in Table *4.22-8* is tortoise habitat or within Ivanpah Valley, the total acreage of habitat in the vicinity that is protected from future development is a minimum of 314,000 acres. Of this, the entire *57,646* acres of the Ivanpah DWMA, 22,000 acres of the LSTS, and a large percentage of the 168,000 acres of the Mojave National Preserve within Ivanpah Valley, comprises desert tortoise habitat. Therefore, upon implementation of the Proposed Action, the vast majority of the 179,000 acres of the tortoise habitat in the Ivanpah Watershed would be protected from future development.

Because the combination of these actions would limit the cumulative effect to approximately 10 percent of the habitat in the area, and special designations for wildlife habitat would preclude future development on the majority of the remainder of the habitat, the cumulative effect would be less than significant. The contribution of the proposed project to the effect would not be cumulatively considerable.

The Regional Assessment (NatureServe 2012) evaluated the cumulative effect of all past, present, and reasonably foreseeable projects on connectivity between tortoise populations in the Ivanpah Watershed and areas outside of the Valley. The Regional Assessment concluded that connectivity had been impacted by the development of I-15, the Union Pacific Railroad, and the development of Primm, as well as the fencing of the LSTS north of Primm. Therefore, there has been a cumulative effect on connectivity in the area. However, the proposed project would not affect any of the previous or remaining connection corridors. Therefore, the contribution of the proposed project to habitat connectivity would not be cumulatively considerable.

4.22.10.6 Cumulative Impacts from Alternatives

Alternative 2: 2,385 Ac Alternative

Potential impacts to wildlife resources under Alternative 2 would be approximately the same as those associated with the Proposed Action. Therefore, the cumulative impacts associated with Alternative 2 would be the same as those described above for the Proposed Action.

***Revised* Alternative 3: *1,685* Ac Alternative**

Potential impacts to wildlife resources under *Revised* Alternative 3 would be approximately the same as that associated with the Proposed Action. Therefore, the cumulative impacts

associated with *Revised* Alternative 3 would be the same as those described above for the Proposed Action.

Alternative 4: Reduced Acreage Alternative

Potential impacts to wildlife resources under Alternative 4 would be reduced from those associated with the Proposed Action. Therefore, the cumulative impacts associated with Alternative 4 would be reduced from those described above for the Proposed Action.

Alternative 5: No Action Alternative

Alternative 5, the No Action Alternative, would not contribute to cumulative impacts to wildlife resources. This alternative would not have the beneficial impact of protecting an additional 23,000 acres to the land area already protected from development in the area.

Alternative 6: No Project, Exclude Solar Alternative

By denying the solar energy application, Alternative 6 would allow existing land uses to continue on the project site as they are today. Therefore, this alternative would not contribute to wildlife resource impacts associated with the removal of the 2,143 acre Proposed Action footprint. However, by excluding the proposed facility area from future solar development, Alternative 6 would contribute incrementally to the reduction in the amount of land area available for renewable energy development, thereby eliminating the possibility that another solar project would select that location and subsequently impact wildlife resources in those locations.

Alternative 7: No Project, Approve Solar Alternative

By denying the solar energy application, Alternative 7 would allow existing land uses to continue on the project site as they are today. In addition, Alternative 7 would not include any management actions that restrict future uses of the site. Therefore, Alternative 7 would not contribute to cumulative impacts to wildlife resources.

4.22.11 Mitigation Measures

4.22.11.1 Applicant-Proposed Measures

The Applicant has designed the construction and operation of the Proposed Action to incorporate a variety of mitigation and minimization measures to minimize impacts on all terrestrial special-status species. These APMs are specified in the Applicant's Plan of Development (First Solar 2011), as well as a variety of management plans and technical reports. A summary of the measures pertinent to the protection of wildlife resources, as well as measures associated with other resources, is as follows:

Desert Tortoise

APM-Wild-1: The Project would adopt the applicable desert tortoise protection measures prescribed by the NEMO Plan, and applicable measures adapted to the Project from the BMPs and mitigation measures prescribed for renewable energy projects on public land.

APM-Wild-2: Desert tortoise relocation would occur as described in the Project BO, Incidental Take Permit, and associated CDFW permitting, and would also be discussed in the Project Desert Tortoise Translocation Plan. Unavoidable impacts to desert tortoise habitat would be mitigated by habitat replacement at a ratio indicated in the Project EIS and as determined through the formal consultation process.

APM-Wild-3: The perimeter fence will include tortoise exclusion fencing as appropriate to project mitigation measures, to prevent desert tortoises from entering the Proposed Solar Farm. *The fence will be installed prior to pre-construction clearance surveys.*

Noxious Weeds

APM-Wild-4: The Applicant will *implement their Integrated* Weed Management Plan provided in support of the Project EIS. This Plan would be implemented during all Project phases.

Birds *and Bats*

APM-Wild-5: *The applicant would implement conservation measures during construction as defined in their Bird and Bat Conservation Strategy (First Solar 2012g). These measures are:*

1. *Vegetation clearing and grading would be avoided wherever possible.*
2. *Vegetation clearing would be conducted outside of the bird breeding season to the extent practicable. When vegetation clearing during breeding season cannot be avoided, the applicant would communicate the rationale to BLM, USFWS, and CDFW. If this occurred, the Lead Bird Biologist or their designee would oversee construction to locate active nests, establish exclusion zones, and, if necessary, stop construction activities that disturb an active nest.*
3. *Exclusion zones would be established around active nests, areas of high levels of bat and bird use, and known bat roosts. Clearance surveys would be conducted within 30 days prior to vegetation removal, and exclusion zones established and monitored. Exclusion zones would be established 200 feet from active nests for passerines, 500 feet from an active raptor nest, two miles from any active eagle nest, and 250 feet from any active burrowing owl nests. Exclusion distances for bat roosts sites, maternity colonies, or hibernacula would be established by the Lead Biologist depending on disturbance type, time of year, and duration of disturbance, but would be a minimum of 165 feet.*
4. *Worker Environmental Awareness Plan training would include bird nest and bat colony avoidance, including identification of and compliance with exclusion zones.*
5. *The project would follow APLIC guidance for overhead utilities.*
6. *Construction activities would be conducted in a manner to reduce potential fire hazards.*
7. *Trash would be removed and disposed promptly to avoid attracting birds and bats.*
8. *The applicant would implement their Integrated Weed Management Plan to reduce the risk of introducing or spreading invasive plant species.*
9. *Re-vegetation would be done using only native plants.*

The applicant would also implement conservation measures during operations as defined in their Bird and Bat Conservation Strategy (First Solar 2012g). These measures are:

1. *The applicant would avoid creating or maintaining features that would attract birds or bats. Road kills would be removed and disposed to avoid attracting scavengers, vegetation around substations would be removed to reduce raptor foraging, and no open water sources would remain on-site during operations.*
2. *Lighting would be designed to use the minimum necessary for safety and security.*

Also during operations, the applicant would conduct avian monitoring and reporting, as described in Section 5 of their Bird and Bat Conservation Strategy (First Solar 2012g). The monitoring program would continue for a minimum of three years following completion of construction, and would be extended if specific mortality level triggers are reached, or in the event of a take of a listed species or eagle. Monitoring would include next surveys, seasonal point counts, and mortality studies.

Dust Control

APM-Wild-6: *The Applicant's* Dust Control Plan will be *implemented* in accordance with Mojave Desert Air Quality Management District requirements prior to construction. The plan will detail control measures to reduce fugitive emissions from construction and operational activities, including but not limited to watering of unpaved roads and other disturbed surface areas, vehicle speed limits, windbreaks, transport container covers, and cleaning and maintenance procedures.

Lighting

APM-Wild-7: The level and intensity of lighting would be the minimum needed for security and safety reasons. These lights would be turned on either by a local switch or by motion sensors that would be triggered by movement at a human's height during maintenance or emergency activities. Lights used for a particular operation would be extinguished once that operation has been completed, providing they are not required for ongoing safety or security purposes. There would be no lights around the Project perimeter in order to minimize the Project's visual impact on surrounding receptors and roads. Sensors on the security fencing would alert security personnel of possible intruders. Exterior lights would be shielded and focused downward and toward the interior of the site to minimize lighting impacts to the night sky and to neighboring areas.

Waste

APM-Wild-8: Chemicals would be stored in appropriate chemical storage facilities. Bulk chemicals are not expected to be used on site. Most other chemicals would be stored in smaller returnable delivery containers. All chemical storage areas would be designed to contain leaks and spills in containment areas or containment plans. Appropriate spill containment and clean-up kits would be kept on site during construction and maintained during the operation of the Project. Construction wastes would be disposed of in accordance with local, state and Federal regulations. Damaged or retired modules would be returned to First Solar's manufacturing facility in Ohio, where they would be recycled into new modules or other new products.

APM-Wild-9: Bulk fuel containers would be stored in secondary containment to catch any potential fuel spills. Waste lubricating oil would be recovered and recycled by a waste oil

recycling contractor. Spilled petroleum hydrocarbon wastes would be collected and transported to an off-site disposal facility authorized to accept the wastes.

APM-Wild-10: Solid wastes generated by the Project would be temporarily stored in wind- and wildlife-secure containers on site and then transported to an off-site disposal facility authorized to accept the wastes.

Noise

APM-Wild-11: Construction activities would typically be limited to daytime hours, thereby minimizing nighttime noise disturbance. Construction activities that must be conducted at night for safety reasons would comply with San Bernardino County standards for construction noise levels.

4.22.11.2 Mitigation Measures Specified for Other Resources

In addition to the Applicant-Proposed Measures, the following measures specified for other resources within this *PA and* EIS/EIR would be required by BLM as conditions of the ROW grant. Although specified for other resources, each of the following measures would contribute to protection of wildlife resources.

MM-Air-1: Air Quality Construction Management Plan. The Applicant shall implement their Air Quality Construction Management Plan (First Solar 2012c) that describes the fugitive dust control measures that would be implemented and monitored at all locations of proposed facility construction. This plan shall comply with the mitigation measures described in the Fugitive Dust Control Rules enforced by the Mojave Desert Air Quality Management District (MDAQMD Rule 403.2), as well as the existing SIP available for PM_{10} and $PM_{2.5}$, and the BLM Fugitive Dust/PM_{10} Emissions Control Strategy for the Mojave Desert Planning Area. The plan shall be submitted to MDAQMD no less than 60 days prior to the start of construction. The plan shall be incorporated into all contracts and contract specifications for construction work. The plan shall outline the steps to be taken to minimize fugitive dust generated by construction activities by:

- Describing each active operation that may result in the generation of fugitive dust;
- Identifying all sources of fugitive dust, e.g., earth moving, storage piles, vehicular traffic;
- Describing the control measures to be applied to each of the sources identified. The descriptions shall be sufficiently detailed to demonstrate that the best available control measures required by the air quality districts for linear projects are used; and
- Providing the following control measures, in addition to or as listed in the applicable rules but not limited to:
  - Frequent watering or stabilization of excavation, spoils, access roads, storage piles, and other sources of fugitive dust (parking areas, staging areas, other) if construction activity cause persistent visible emissions of fugitive dust beyond the work area;
  - Use of street sweeping and trackout devices at the construction site. Sweep streets daily (with water sweepers) if visible soil material is carried into adjacent public streets or wash trucks and equipment before entering public streets;

- Apply chemical soil stabilizers or apply water to form and maintain a crust on inactive construction areas (disturbed lands that are unused for four consecutive days);
- Cover stockpiles and suspend construction work when winds exceed 30 miles per hour;
- Pre-watering of soils prior to clearing and trenching;
- Pre-moisten, prior to transport, import and export dirt, sand, or loose materials;
- Installing temporary coverings on storage piles when not in use. Cover loads in haul trucks or maintain at least six inches of free-board when traveling on public roads;
- Dedicating water truck or high/capacity hose to any soil screening operations;
- Minimizing drop height of material through screening equipment;
- Reducing the amount of disturbed area where possible; and
- Planting vegetative ground cover in disturbed areas as soon as possible following construction activities.

The Applicant or its designated representative shall obtain prior approval from the MDAQMD prior to any deviations from fugitive dust control measures specified in the Air Quality Construction Management Plan. A justification statement used to explain the technical and safety reason(s) that preclude the use of required fugitive dust control measures shall be submitted to the appropriate agency for review.

The provisions of the Air Quality Construction Management Plan shall also apply to project decommissioning activities.

MM-Air-3: Operations Emissions Reduction. The Applicant shall implement the following measures to reduce emissions during operations and maintenance activities:

- The Applicant shall control fugitive dust from the unpaved roads on the site during operation using the following methods;
- The main access road for employees and deliveries to the maintenance complex shall be paved as early during construction as practical;
- The other unpaved roads at the site shall be stabilized using water or soil stabilizers so that vehicle travel on these roads does not cause visible dust plumes;
- Traffic speeds on unpaved roads shall be limited to no more than 15 miles per hour. Traffic speed signs shall be displayed prominently at all site entrances and at egress point(s) from the central maintenance complex;
- All on-site off-road equipment and on-road vehicles for operation/maintenance shall be new equipment that meets the recent California Air Resources Board engine emission standards or alternatively fueled construction equipment, such as compressed natural gas, liquefied natural gas, or electric, as appropriate;
- All equipment shall be turned off when not in use. Engine idling of all equipment shall be minimized; and
- All equipment engines shall be maintained in good operating condition and in proposed tune per manufacturers' specification.

MM-Lands-2: The Decommissioning Plan shall ensure compliance with all applicable federal, State, and local plans, policies, and regulations at the time of decommissioning.

MM-Veg-1: Minimize Impacts to Vegetation Communities. Final engineering of the project shall reduce the size of the temporary construction work areas where possible and minimize the impacts to sensitive vegetation communities. Prior to the start of construction, work areas (including, but not limited to, staging areas, access roads, and sites for temporary placement of construction materials and spoils) shall be delineated with orange construction fencing or staking to clearly identify the limits of work and shall be verified by the biological monitor (MM-Veg-2) prior to ground disturbing activities. Fencing/staking shall remain in place for the duration of construction. Spoils shall be stockpiled in disturbed areas lacking native vegetation or where habitat quality is poor. To the extent possible, disturbance of shrubs and surface soils due to stockpiling shall be minimized. All disturbances, vehicles, and equipment shall be confined to the flagged areas.

When feasible, construction activities shall implement drive and crush rather than grading. Construction equipment would drive over and crush native plants to minimize impacts to the roots of desert shrubs. Drive and crush is expected to reduce the recovery time of desert scrubs within the temporary construction areas.

MM-Veg-2: Designated Biologist. Prior to ground disturbing activities, an individual shall be designated by the Applicant and approved by the BLM and wildlife agencies (USFWS and CDFW) as a Designated Biologist (i.e., field contact representative). A Designated Biologist will be assigned for the period during which on-going construction and post-construction monitoring and reporting by an approved biologist is required, such as annual reporting on vegetation restoration. The Designated Biologist shall have the authority and responsibility to halt activities that are in violation of the mitigation measures. To avoid and minimize effects to biological resources, the Designated Biologist shall:

- Notify BLM's Authorized Officer and the wildlife agencies at least 14 calendar days before initiating ground disturbing activities.
- Immediately notify BLM's Authorized Officer and the wildlife agencies, in writing, if the project Applicant does not comply with any of the mitigation measures.
- Conduct compliance inspections at a minimum of once per month during on-going construction after clearing, grubbing, and grading are completed, and submit a monthly compliance report to BLM's Authorized Officer until construction is complete.

Prior to project initiation, the Designated Biologist shall develop and implement a WEAP which shall be available in English and Spanish. Wallet-sized cards summarizing the information will be provided to all construction and O&M personnel. The WEAP shall include the following:

- An explanation of the function of flagging that designates authorized work areas.
- An explanation of the sensitivity of the vegetation communities and special status plant species within and adjacent to work areas.
- The importance of avoiding the introduction of invasive weeds onto the proposed Stateline site and surrounding areas.

MM-Veg-3: Pre-construction Soil and Plant Salvage.

Prior to construction, the Applicant shall implement their Vegetation Management Plan (First Solar 2012f). The Plan would be amended to include the following requirements:

Soil Characterization and Preservation

A soil baseline characterization shall be conducted and reported to the BLM prior to site disturbance. The characterization shall include:

a. Profile description of three representative pedons. (A pedon is the smallest three dimensional sampling unit displaying the full range of characteristics of a particular soil and typically occupies an area ranging from about 1 to 10 square yards [Brady and Weil, 2002]).

b. Characterization of surface application (that is, is desert pavement or cryptogamic crust present). Description of cryptogamic crust shall include major groups of organisms identified at the site (filamentous cyanobacteria, other cyanobacteria, mosses, lichens, liverworts) and the characteristics by which they were identified.

c. Documentation of soil macro-invertebrates (that is, presence of ants, termites, and other significant macro-invertebrates)

d. Soil texture (that is, percent sand, silt, and clay), along with a reference to a widely accepted method for making the determination.

e. Bulk density, along with a reference to a generally accepted method for making the determination.

f. Fertility (that is, nutrient status, electrical conductivity, sodium adsorption ratio), along with methods by which composite samples were collected and the laboratory methods used to determine these properties. Composite samples shall contain equal contributions from at least six randomly-located collection points within the soil donor area.

g. Organic matter content and total carbon and nitrogen content, along with a reference to generally accepted methods for making the determinations.

Soil compaction shall be determined by measurement of bulk density in grams per cubic centimeter (or numerically equivalent units). Bulk density may be determined by any of several standard measurements, but the method used must be referenced to a widely-accepted soil methodology publication. In no case shall soil be compacted to bulk density that exceeds 1.6 g/cc except where no planting is to take place. Penetrometer measurements are not a substitute for bulk density measurements.

Once characterized, topsoil for this project shall be salvaged and stored within the project area. Topsoil is defined as the soil volume from the original surface to 8 inches in depth. The upper 1/4 inch may be collected separately to preserve biological crust organisms. Topsoil may not be distinguishable by color or organic content but shall have most fine roots during the active growing season. Soil shall be collected, transported, and formed into stockpiles only while the soil is dry. The vegetation in place at or immediately before topsoil collection shall be healthy native vegetation with less than 15 percent absolute cover of exotic weed growth. Soil occupied by vegetation of high plant diversity shall be given priority over soil occupied by low diversity native vegetation. Soil may be collected with a front loader, bulldozer, or scraper and transported to storage areas by front loader, dump truck, or scraper. The equipment transporting the soil may not travel across the stockpile more than the minimum number of times required to build the soil to its intended depth. The depth of the stockpiles shall not exceed 4 feet in the case of sandy loam or loamy sand soils. Topsoil stockpiles shall be kept

dry and covered if no vegetation is introduced. If native vegetation is grown on the stockpiles to increase seeds and soil organisms, no cover is required. Artificial watering may be provided at the operator's option.

Stockpiled topsoil shall be used to grow native plant species for the purpose of producing native seeds and building beneficial microorganisms in the soil volume. All native plant species encountered in the vegetation surveys shall be included in the growing rotation on the stockpiles. Most growing space needs to be dedicated to the species for which the most seeds shall be required. At least half by area of the growing area during each growing cycle shall be dedicated to plant species known to be good mycorrhizal host plants. Members of the families Chenopodiaceae and Amaranthaceae should be limited to less than half the area of the soil stockpiles, with the other half occupied by known mycorrhizal host plant species.

Biological Crust Characterization and Preservation

Soil biological crust is defined here as a mixture of organisms that occupy and protect the surface of the soil in most desert ecosystems. The organisms often include filamentous and non-filamentous cyanobacteria, mosses, lichens, liverworts and fungi. Soil biological crust shall be preserved by collecting the upper 1/4 inch of topsoil from areas to be graded. The applicant shall collect specific areas known to contain biological crust organisms or collect upper soil from the entire area. Collections are to emphasize filamentous cyanobacteria; but other cyanobacteria, mosses, lichens, and liverworts are also considered valuable contributors to the soil biological crust and shall be important in protecting against erosion and reducing weed invasion. Soil surface crust shall be air dried and stored dry in a shaded location in containers that allow air movement, such as loose-weave fabric bags. In no case may the stored crust be subject to wetting or direct sunlight during storage. All containers shall be clearly labeled with date and location of original collection; name and contact information of persons responsible for identifying suitable material to collect; and the persons who collected, stored, and maintained collections.

Soil biological crust shall be re-applied at the time of replanting by crumbling the stored material and broadcasting it on the surface of the soil. Approximately 10 percent of the stored material shall be broadcast on topsoil storage areas among plants being grown for seed and soil microorganisms. When the growing cycle progresses to new planting, the soil supporting biological crust shall be collected and stored by the same methods prescribed for collections from the original soil, in clearly labeled bags or other suitable containers.

Succulent Transplant

The majority of the succulent plants located in areas to be dragged, rolled or spot graded, or above mowing height shall be salvaged and transplanted into a nursery area. Succulents to be transplanted into the nursery area shall be placed in their same compass orientation as they were in their original location. The salvaged plants also shall be kept in long-term soil stockpiles, along with natives grown on the stockpiles, to keep the soil biota fresh.

Succulent transplants done during preparation of the project site shall be fully documented and serve as trials of methods to be used during plant salvage on the project site. Records shall be maintained for each transplanted specimen including species, height, number of branches or pads as appropriate, donor location by UTM coordinates, methods used to remove, transport and store the plant, period of temporary storage, location, facility description and planting medium used for storage, and frequency of watering during storage. The records shall include plant application of planting at the storage area, and quarterly during storage until such time as each plant is placed in the field, or dies.

Seed Collection

Seed collection shall be carried out within the project area. Future seed collection in the project vicinity shall be negotiated separately with BLM. Collection areas shall be within 10 miles of the boundaries of the project site and shall be on similar terrain, soil, exposure, slope and elevation to the project site. Seed collection guidelines shall conform to all laws and regulations in effect at the time of collection and shall follow the guidelines for native seed collection provided by California Native Plant Society. Seed collection shall include all plant species known to be removed from the facility. If insufficient seeds are provided by "seed farming" and collection within 10 miles of the site, BLM may approve collection from a greater distance provided other environmental factors at the collection site are good matches to the project site.

MM-Veg-4: *Integrated* Weed Management Plan. The Applicant shall implement *their Integrated* Weed Management Plan to control non-native invasive weeds, as developed in cooperation with the BLM and County of San Bernardino. The *Integrated* Weed Management Plan for the project shall include a risk assessment of the invasive weed species currently known within the proposed Stateline site, procedures to control their spread on site and to adjacent off-site areas, and procedures to help minimize the introduction of new weed species. The *Integrated* Weed Management Plan shall be submitted to the BLM and County for review and approval prior to the start of construction and shall be implemented prior to, during, and following the completion of construction for the life of the project.

MM-Veg-5: Revegetation of Temporary Disturbed Areas and Project Site. *The full project site shall be revegetated according to the Applicant's Closure, Decommissioning, and Reclamation Plan (First Solar 2012d) following project decommissioning. In addition, any areas temporarily disturbed during construction would be re-vegetated, using the same methods, as soon as construction is completed.*

The Plan would be amended to include the following requirements:

Topsoil Application

Stored topsoil would be reapplied as a layer over decompacted subgrade material as a means of implementing the restoration program. The topsoil layer shall be a minimum of 3 inches in depth. The topsoil layer shall be bonded to the subgrade with a lightly-loaded sheepsfoot roller, a land imprinter, or other implement that interlocks material from the two layers without causing bulk density in excess of 1.6 grams per cubic centimeter. Seeds may be distributed concurrently with layer bonding if a land imprinter is employed for both purposes.

Seed Application

The vegetation to be introduced to the site shall consist entirely of plant species native to the northern Mojave Desert. No exotic plant species can be included on the seed lists nor introduced with native species. Exotic species, regardless of their presence in the original vegetation, shall not be counted as successful vegetation establishment.

Batches of seeds collected or produced for this project shall be tested by a certified seed testing laboratory that shall provide for each batch of seeds determinations of purity, germination, and seed count. Seed not sorted by plant species, including collections from under shrubs, from depressions in the soil, and from harvester ant caches, shall be used to supplement defined seed batches but shall not be included in the claim of known seed applications.

Seed application would be done by methods that provide good soil contact and protection from granivores. Information about the imprinting process and model specifications for imprinting contracts are available in St. John and Dixon (1996). Seed shall be applied by methods that provide good seed-soil contact. The most successful methods in similar conditions are land imprinting or broadcasting followed by a roller that shall press seeds into the soil but not cause heavy compaction.

Mulch application is done at the option of the operator. Mulch application to the soil needs to consist of local non-weedy materials, the collection of which is incidental to other activities onsite. In no case may mowing or grading of native vegetation be carried out for the sole purpose of generating mulch. Mulch needs to be applied only to the soil surface unless the soil has already been inverted or severely disturbed through other procedures. Materials of relatively high nitrogen content, including alfalfa hay, may not be applied.

Mycorrhizal inoculation shall be carried out in all planting areas having fewer than one spore per cubic centimeter of topsoil, where topsoil is defined as soil between the surface and 8 inches depth, or to bedrock if the soil is less than 8 inches in depth. Spore counts shall be carried out by methods given in Johnson et al. or other accepted methodology. Inoculation shall result in a minimum of one spore per cubic centimeter of soil as defined for initial spore counts. No inoculation shall be required in areas where the applicant is able to demonstrate that all plant species on the list of final desired vegetation are known to be non-host species. This condition might be found in saline or very alkaline soils.

Performance Monitoring

Qualitative monitoring shall be conducted in years one to 10 at all restored areas. The goal of qualitative monitoring is to document conditions and evaluate the need for remediation to ensure the restored areas are progressing toward the performance success standard.

During monitoring, the success parameters (cover, density, and richness of annual and perennial vegetation) shall be estimated. Other site characteristics to be monitored in addition to the success parameters include soil erosion, natural recruitment of native plant species, reproduction, exotic plant species abundance, animal use, and pattern of established vegetation (i.e., presence of large interspaces). Lack of erosion at a site provides evidence that soils have been adequately stabilized, while natural recruitment and/or reproduction indicate that important functional processes are in place that initiate regeneration, such as pollination and seed dispersal. Exotic species potentially compete with native perennial species, and relatively high abundance can have a negative effect on site conditions. Evidence of animal use is an indicator that habitat conditions are being restored. Patterns of established vegetation help determine whether large bare areas are indicative of site conditions or simply a result of the patchiness of surrounding vegetation.

Based on monitoring observations, the restored site shall be given a success rating of Exceeds Objectives, Acceptable, Unacceptable, or Severely Deficient, and determinations shall be made regarding remediation activities, as applicable. Remediation activities shall include reseeding the site, spot seeding, adding transplants, erosion control, and fencing. Recommendations may include waiting another year or two prior to any remediation to allow for favorable germination/establishment conditions, with approval of the BLM.

Photography shall be used to help document the status of recovery at all sites. Photo points shall be established and photographs shall be taken prior to disturbance, when restoration efforts are completed, and during each monitoring visit.

Monitoring shall be scheduled and reported to the BLM once per month during the first growing season after seed application, switching to once per quarter starting in July after seed

application. Monitoring may be reduced to once per year in late March through mid May of each year after the second growing season.

Performance monitoring shall be conducted annually during the spring flowering season, between mid-March and mid-May to assess restoration performance. Performance monitoring surveys of all vegetation on the subject sites shall be carried out in a manner able to detect project success. The entire project area shall be divided into vegetation types as described by Sawyer and Keeler-Wolfe. The boundaries of each vegetation type shall be compared with the baseline survey maps. Each vegetation type shall have soil, terrain, exposure, elevation, and slope clearly indicated. For each vegetation type, a list of perennials and appropriate annuals shall be provided. Surveys shall be performed at a season when the year's annuals are identifiable; generally from early March through late April. Survey methodology should emphasize accuracy rather than precision. BLM shall accept rapid methods such as the step-point method (Bonham 1988) provided transects are laid out in a manner that captures the true composition of the vegetation. The combined length of step-point transects in each vegetation type shall approximate the square root of the area of the vegetation type or at least 400 intercepts and shall be laid out to give unbiased representation of all portions of the vegetation type. Vegetation need not be divided into herb and shrub layers as long as all species intercepted by points are included in the survey. Additional species not encountered on the transects shall be recorded separately on a diversity list.

Restoration shall be considered successful if plant cover, density, and richness of native perennial vegetation (mainly dominant shrubs) is equal to or exceeds 70 percent for these parameters in undisturbed reference areas. A minimum of two undisturbed reference/control sites in the western Ivanpah Valley area shall be selected in cooperation with BLM.

MM-Veg-6: Streambed Alteration Agreement. Given the anticipated impacts to CDFW jurisdictional areas, the Applicant would be required to obtain a Streambed Alteration Agreement from the CDFW in accordance with Section 1602 of the California Fish and Game code. This permit would include mitigation measures that would be implemented by the Applicant.

MM-Water-8: Construction SWPPP Specifications. A Construction SWPPP shall be developed for the Stateline facility. NOIs shall be filed with the SWRCB and the Lahontan Regional Water Quality Control Board. A Waste Discharge Identification Number shall be obtained prior to the issuance of construction permits. The SWPPP shall be stored at the construction site for reference by construction personnel and for inspection review. The SWPPP shall include BMPs that would be adhered to during construction in order to stabilize graded areas and waterways, and reduce erosion and sedimentation. Such BMPs may include but are not limited to those described below.

- Erosion minimizing efforts such as straw wattles, water bars, covers, silt fences, and sensitive area access restrictions (for example, flagging) that would be installed before clearing and grading begins.
- Mulching, seeding, or other suitable stabilization measures would be used to protect exposed areas during construction activities.
- During construction activities, measures would be in place to ensure that contaminants are not discharged from the construction sites.
- Debris and sediment basins would be established, both upgradient and downgradient, as necessary, to capture silt and other materials, which might otherwise be carried from the site by rainwater surface runoff. The basins shall be designed in accordance with the

County Detention Basin Policy, which includes standards for sizing and armoring. This would require armoring on both the upgradient and downgradient (water release) sides of each basin.

- Straw wattles (or comparably effective devices [as determined by the onsite Civil Engineer, in consultation with the Environmental Monitor]) shall be placed on the downslope sides of the proposed work which would direct flows into temporary sedimentation basins.
- Stormwater protection berms positioned in the area of facility structures (substation and O&M Building).
- The SWPPP shall include a Sedimentation and Erosion Control Plan to minimize the potential for project sediment to leave the site and result in downstream sedimentation.
- All erosion control materials shall be biodegradable and natural fiber.

All be BMPs required by the SWPPP shall be checked and maintained regularly and after all larger storm events. All remedial work shall be done immediately after discovery so sedimentation control devices remain in good working order during the entire construction phase. Proper implementation will be verified by the Environmental Monitor.

MM-Water-9: Storm Water Management Plan. The project owner shall implement the requirements of their Storm Water Management Plan (First Solar 2012k) to operate and monitor to effectiveness of their proposed stormwater management system.

The Storm Water Management Plan shall be submitted to both the BLM and the County for review and approval, and shall include a plan to monitor and inspect periodically, before first seasonal and after every storm event:

- Security and Tortoise Exclusion Fence: Inspect for damage and buildup of sediment or debris.
- Facility structures within drainages or subject to drainage overflow: Inspect for tilting, damage, depth of scour compared to depth below ground.
- Drainage Channels: Inspect for substantial migration or changes in depth, and transport of trash, debris, or broken PV module components.
- Stormwater protection features, including protection berms, culverts, and cement road crossings.
- Constructed Debris and Sediment Basins: Inspect for scour and structural integrity issues caused by erosion, and for sediment and debris buildup.
- Ivanpah Playa Surface: Inspect for changes in the surface texture and quality from sediment buildup, erosion, or transported debris.

Short-Term Incident-Based Response:

- Security and Tortoise Exclusion Fence: Repair damage, and remove built-up of sediment and debris.
- Facility structures: Remove broken materials, damaged structure, and wiring from the ground, and replace with materials meeting original construction specifications.
- Drainage Channels: No short-term response necessary unless changes indicate risk to facility structures.

- Constructed Debris and Sediment Basins: Repair damage, maintain erosion control measures and remove built-up sediment and debris.
- Ivanpah Playa Surface: Remove transported debris, notify BLM to develop plan for addressing sedimentation or erosion issues.

Long-Term Design-Based Response:

- Propose operation/BMP modifications to address ongoing issues. Include proposed changes to monitoring and response procedures, frequency, or standards.
- Propose design modifications to address ongoing issues. This may include construction of additional active storm water management diversion channels and/or detention ponds.
- Inspection, short-term incident response, and long-term design-based response may include activities both inside and outside of the approved right-of-way. For activities outside of the approved right-of-way, the Applicant will notify BLM and acquire environmental review and approval before field activities begin.

At least sixty (60) days prior to commercial operation, the project owner shall submit to the BLM and the County a copy of the Storm Water Management Plan for review and approval prior to commercial operation. The Applicant shall retain a copy of this plan onsite at the power plant at all times.

Water-10 Accidental spill control and environmental training. Prior to the onset of construction of the Stateline facility, the following specifications must be provided by the Applicant to the BLM: define areas where hazardous materials would be stored, where trash would be placed, where rolling equipment would be parked, fueled and serviced, and where construction materials such as reinforcing bars and structural steel members would be stored. The Applicant shall also prescribe hazardous materials handling procedures for reducing the potential for a spill during construction, and shall include an emergency response program to ensure quick and safe cleanup of accidental spills. These specifications may be included in the project's SWPPP, or may be included as a separate plan.

Prior to and during construction, an environmental training program shall be established to communicate environmental concerns and appropriate work practices, including spill prevention and response measures, and SWPPP measures, to all field personnel. A monitoring program shall be implemented to ensure that the plans are followed during all construction, operations and maintenance, and decommissioning activities.

Storage of fuels and hazardous materials shall be prohibited within 200 feet of surface water features and private groundwater supply wells, and within 400 feet of community or municipal groundwater supply wells (if it is determined that such wells exist on or in close proximity to the project site).

During construction/ground disturbing activities and operation, all vehicles and equipment, including all hydraulic hoses, shall be maintained in good working order so that they are free of any and all leaks that could escape the vehicle or contact the ground, and to ensure that any leaks or spills during maintenance or storage can be easily and properly removed.

Compliance will be verified by the Environmental Monitor and the local SWPPP authority at the time of construction.

4.22.11.3 Additional Mitigation Measures

In addition to the Applicant-Proposed Measures and measures specified for other resources, the following measures specified for other resources within this *PA and* EIS/EIR would be required by BLM as conditions of the ROW grant.

MM-Wild-1: Designated Desert Tortoise Biologist: Prior to ground disturbing activities, one or more individuals shall be designated by the Applicant and approved by the BLM and wildlife agencies (USFWS and CDFW) as a Designated Biologist (i.e., field contact representative). The Designated Biologist should possess a bachelor's degree in biology, ecology, wildlife biology, herpetology, or closely related fields as determined by the BLM and USFWS. The Designated Biologist must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises and tortoise sign. In addition, the Designated Biologist would have the ability to recognize and accurately record biological information.

The Designated Biologist shall be employed for the period during which on-going construction and post-construction monitoring and reporting by an approved biologist is required, such as annual reporting on habitat restoration. Each Designated Biologist shall be approved by the BLM's Authorized Officer (i.e., BLM field manager, Needles Field Office). The Designated Biologist shall have the authority to ensure compliance with the Conservation Measures for the desert tortoise set forth in the BO and mitigation measures specified in the BLM ROW grant, and will be the primary agency contact for the implementation of these measures. The Designated Biologist will have the authority and responsibility to halt any proposed Stateline facility activities that are in violation of the BO Conservation Measures or terms and conditions. A detailed list of responsibilities of the Designated Biologist is summarized below. To avoid and minimize effects to biological resources, the Designated Biologist shall:

- Notify BLM's Authorized Officer and the USFWS at least 14 calendar days before the initiation of ground disturbing activities.
- Immediately notify BLM's Authorized Officer and the USFWS in writing if the Applicant does not comply with any BO Conservation Measures or terms and conditions including, but not limited to, any anticipated failure to implement BO Conservation Measures or terms and conditions within the periods specified.
- Conduct compliance inspections daily during on-going construction as clearing, grubbing, and grading are completed, and submit a monthly compliance report to BLM's Authorized Officer until construction is complete.

MM-Wild-2: Desert Tortoise Authorized Biologists and Biological Monitors. An appropriate number of authorized biologists and biological monitors shall be present during construction for the protection of desert tortoises. The names of all authorized biologists shall be submitted to the BLM, USFWS, and CDFW for review and approval at least 30 days prior to initiation of any desert tortoise clearance surveys. Project activities shall not begin until authorized biologists and biological monitors have been approved. Replacements of authorized biologists shall require BLM and USFWS approval. Authorized Biologists are those biologists who have been approved to handle desert tortoises by the USFWS and CDFW under authority of the Biological Opinion and State Incidental Take Permit. Biological Monitors are qualified biologists who perform construction monitoring activities but lack authority to handle desert tortoises, except when a tortoise is in immediate danger. The BLM shall approve all biological monitors.

The Biological Monitor will be a qualified biologist who shall be responsible for identification of habitat that supports special status species. The Biological Monitor shall be responsible for

implementation of measures requiring a qualified biologist's intervention. Biological monitors work under the direction of Authorized Biologists and the Designated Biologist(s).

Authorized biologists and biological monitors would be assigned to monitor each area of activity where conditions exist that may result in take of desert tortoise (*e.g.,* clearing, grading, lowering in pipe, backfilling, recontouring, and reclamation activities). An Authorized Biologist or Biological Monitor shall be assigned to each active construction area. The Authorized Biologist and Biological Monitor shall also be responsible for inspecting the integrity of tortoise fencing through the project life, and walking the fenceline to identify and, if necessary, handle tortoises that show signs of fenceline distress. The Authorized Biologist and Biological Monitor shall have the contractual authority to temporarily halt construction should a federally listed, state listed, or special status species be found or encountered during construction activities so that procedures may be implemented to either relocate the species (if applicable) or notify the appropriate agency personnel.

Only Authorized Biologists approved by the USFWS and CDFW shall be permitted to handle desert tortoises in cases where a tortoise must be moved out of harm's way or translocated. Only Authorized Biologists may handle desert tortoises to implement the requirements of the Translocation Plan. Biological Monitors shall provide clearance when heavy equipment is driven or tracked to new areas of the Proposed Action or areas that have not been actively in construction. Clearing is achieved by walking or driving ahead of (escorting) the equipment and surveying for desert tortoises that could be crushed. If a desert tortoise is found in a travel lane, travel shall be halted until the tortoise has either moved off of the road on its own, or if after 15 minutes, an Authorized Biologist has moved it from the road.

Authorized biologists, under the direction of the Designated Biologist, shall be responsible for determining compliance with measures as defined by the Biological Opinion and other agreements. Authorized biologists shall maintain a detailed record of all desert tortoises encountered during project surveys and monitoring. Environmental inspection and monitoring procedures will be in compliance with the environmental commitments documented in the EIS/EIR and any special conditions that will be required as part of other Federal and/or State permits, approvals, or licenses.

MM-Wild-3: Worker Environmental Awareness Program (WEAP). All applicant employees and contractors working in the field would complete a WEAP administered by a qualified biologist that is familiar with the species in question. Program content would be approved by the BLM and appropriate state agencies. Training shall primarily be administered in a location off of the ROW; however, Biological Monitors may provide in-field training in situations where this is necessary. A detailed log of all personnel having received WEAP training shall be maintained.

At a minimum, the program would cover species identification, distribution, general behavior and ecology, sensitivity to human activities, threats (including introduction of exotic plants and animals), legal protection, penalties for violations of federal and state laws, reporting requirements, and Project-related protective measures in the Biological Opinion. All field workers would be instructed that activities must be confined to locations within the approved Proposed Action area. In addition, the program would include fire prevention measures to be implemented by employees during construction of the Proposed Action. The program would instruct participants to report all special status species observations during construction activities to a Biological Monitor.

MM-Wild-4: Delineation and identification of sensitive areas. Prior to construction, the Applicant shall stake, flag, fence or otherwise conspicuously delineate all environmentally

sensitive areas that are to be protected in place and remain undisturbed during construction. All disturbances, vehicles, and equipment shall be excluded from the flagged areas.

MM-Wild-5: Existing routes of travel. Existing routes of travel would be used for ingress and egress to the project site. Access roads that require improvement in habitats occupied by desert tortoise or other special-status or protected wildlife would have an authorized biologist or biological monitor survey the area prior to modification of the route. Cross-country travel by vehicles and equipment would be prohibited. Speed limits along all access roads shall not exceed 15 miles per hour in order to minimize dust during construction and O&M activities.

MM-Wild-6: Pre-construction surveys for desert tortoise. Construction sites, staging areas, and access routes would be cleared by a qualified desert tortoise biologist before the start of construction, ground-disturbing activities, equipment or vehicle staging, or other actions with the potential to harm or kill desert tortoises or other special-status and protected wildlife. Authorized biologist(s) or biological monitor(s) must survey the site for desert tortoises using agency-approved survey techniques. If construction occurs during the desert tortoise active season (March 1 through October 31), or when temperatures and environmental conditions are conducive to tortoise activity as determined by an authorized biologist, the survey would occur within 48 hours before surface disturbance. During the inactive season (November 1 through February 28, except as noted above), when conditions are not conducive to tortoise activity as determined by an authorized biologist, one survey must occur within 72 hours of surface disturbance or up to five days in advance of disturbance if conditions are not favorable for tortoise activity.

MM-Wild-7: Desert Tortoise Handling. Impacts on the desert tortoise shall be mitigated by relocating any individuals observed within the immediate construction area to suitable habitat outside the development impact footprint, as feasible. Only an Authorized Biologist, possessing necessary permits, shall relocate individuals. All relocations of desert tortoises shall be documented and reported to the appropriate jurisdictional agencies, and consultation prior to relocation may be required.

Tortoises excavated from burrows must be relocated to unoccupied natural or artificially constructed burrows immediately following excavation. Relocation of tortoises shall be done in accordance with the Applicant's Translocation Plan, Conservation Measures specified in the BO, and mitigation measures specified in the BLM ROW grant.

All potential desert tortoise burrows found in the construction zone, whether occupied or not, shall be excavated by an authorized biologist to allow removal of desert tortoises or desert tortoise eggs. Tortoises and nests found within the Proposed Action area must be relocated by an authorized tortoise biologist in accordance with the latest USFWS-approved protocol detailed in the Desert Tortoise Field Manual (USFWS 2009). Unoccupied burrows would be collapsed or blocked to prevent tortoise re-entry. Any desert tortoise burrows and pallets that are observed outside of but within 50 feet of the construction work area must be flagged for avoidance. No stakes or flagging shall be placed on the berm or in the mouth of a desert tortoise burrow. Desert tortoise burrows shall not be marked in a manner that facilitates poaching. Avoidance flagging must be designed to be easily distinguished from access route or other flagging, and would be designed in consultation with experienced construction personnel and authorized biologists. All flagging shall be removed following construction activities.

Procedures for handling tortoises would follow those described in the Desert Tortoise Field Manual (USFWS 2009c). All tortoises would be handled using disposable surgical gloves. The gloves would be disposed of after handling each tortoise. Equipment or materials that contact desert tortoises must be sterilized, disposed of, or changed before contacting another tortoise. Desert tortoises must only be moved for the purpose of moving the tortoises out of harm's way. The authorized biologist would document each tortoise encounter/handling with the following information, at a minimum: a narrative describing circumstances; vegetation type; dates of observations; conditions and health; any apparent injuries and state of healing; if moved, the location from which it was captured and the location where it was released; maps; whether animals voided their bladders; and diagnostic markings (that is, identification numbers marked on lateral scutes).

Whenever a vehicle or construction equipment is parked longer than 10 minutes within desert tortoise habitat, whether the engine is engaged or not, the ground around and underneath the vehicle shall be inspected for desert tortoises prior to moving the vehicle. If a desert tortoise is observed, an authorized biologist shall be contacted. If the tortoise does not move on its own within 15 minutes, the tortoise shall be removed and relocated by the authorized biologist prior to vehicle movement.

Water shall not be allowed to pool on the access roads, or any other area of the Proposed Action where the potential for desert tortoise presence exists. In particular, water storage tanks shall be monitored for leaks, and dust control trucks shall be monitored for pooling water.

Any construction pipe, culvert, or similar structure with a diameter greater than three inches above ground on the construction site for one or more nights shall be inspected for tortoises before the material is moved, buried, or capped by the Applicant. As an alternative, structures may be capped before being stored on the construction site.

Any movement of a desert tortoise identified in advance of construction would be limited to that necessary to move the individual out of harm's way. The movement would be conducted only by the Authorized Biologist, in accordance with procedures defined in the Biological Opinion.

A Biological Monitor would be present during operation and maintenance activities within occupied desert tortoise habitat, and pre-maintenance clearance surveys. Exclusionary fencing would be required in occupied desert tortoise habitat if the maintenance action requires significant ground disturbance.

MM-Wild-8: Habitat Acquisition for Desert Tortoise. To compensate for desert tortoise habitat affected during construction, these effects would be offset through either an acceptable land acquisition, habitat improvements or an assessed financial contribution, based on the final construction footprint.

Compensation Ratio

The Applicant would provide compensatory mitigation at a 3:1 ratio for impacts to 2,143 acres (for the Proposed Action) or other acreage disturbed by the final project footprint. For compliance with the California Endangered Species Act (CESA), as administered by the CDFW, at least two-thirds of the 3:1 mitigation would be achieved by acquisition, in fee title or in easement, of land suitable for desert tortoise*, or by habitat enhancement, such as retirement of grazing, as allowed for under the CDFW's Interim Mitigation Strategy As Required by SB X8 34, September, 2010.* The Applicant would provide funding for the acquisition, initial habitat improvements, and long-term management endowment of these CDFW compensation lands.

The remaining one-third of the 3:1 compensatory mitigation would be developed in accordance with BLM's mitigation requirements as described in the NEMO Plan Amendments. The formula includes both payment of credits into a conservation fund, and land purchase. This mitigation

would *require the* acquisition of up to 2,143 acres of land (or area equivalent to the final approved ROW grant) within the Eastern Mojave Recovery Unit, or desert tortoise habitat enhancement or rehabilitation activities that meet BLM's approval, or some combination of the two. Potential habitat enhancement or rehabilitation activities could include, but are not limited to: fencing of major road ways; facilitation of tortoise connectivity (e.g. adding culverts); removal of grazing (as already identified in NEMO); tortoise head start; restoration of illegal, unauthorized, or closed routes; safing of abandoned mines; or providing increase law enforcement or education out reach. *Under federal law, mitigation is required to be reasonably related to the affected area (nexus) and roughly proportionate to the development's proposed impacts. Land that is acquired and donated to the federal government for management by the BLM remains subject to all public land laws, including FLPMA.*

Route Rehabilitation Specifications

For route rehabilitation completed as part of the compensation requirements, restoration of the impacted area shall include the physical modifications necessary to return the area to a state approaching pre-disturbance conditions. The following provides specifications for the rehabilitation.

Restoration steps shall include ripping to decompact the soil, vertical mulching, relocation of native shrubs, and removal of Russian thistle or other non-nativbe species. Small to medium-sized boulders shall be transported from nearby areas using small excavating equipment. Vertical mulching, or relocation of dead vegetation and other organic material, into the area shall be performed with hand equipment or excavating equipment. This material as well as live shrubs for replanting shall be gathered from areas to be disturbed within the Stateline Solar Farm project area.

Only as many plants as needed to mask the restoration area shall be used, and shall not exceed 15 percent of the plants in the surrounding area. Transplanted plants shall consist solely of those species that are common in the surrounding plant community (e.g., creosote bush [Larrea tridentata], cheesebush [Ambrosia salsola], burrobush [A. dumosa], four-winged saltbush [Atriplex canescens] cattle spinach [Atriplex polycarpa], Mojave yucca [Yucca spp.schidigera] and succulents [cholla, club cholla, barrel cactus, hedgehog cactus, pincushion cactus]). To achieve replanting, a hole of adequate size to accommodate the root mass of the shrub shall be manually excavated, and the shrub shall be placed in the hole with care to minimize damage to its roots. Caution shall be exercised to minimize and, where possible, eliminate crushing of vegetation during these activities, consistent with the restoration objectives of the project. Water shall be used to water relocated live shrubs after planting. Water shall be supplied by a water truck or from a water tank carried on a utility truck. The crew for the reclamation effort shall consist of not more than 10 persons including supervisory staff and monitors. The equipment that may be used shall consist of pickup trucks, flat-bed 2½ ton truck and trailer, water truck, small excavating equipment (such as backhoe or bobcat) and a skip loader.

Daily preconstruction safety meetings shall take place and all activities shall adhere to a site-specific health and safety plan.

Dust control measures shall be implemented to minimize fugitive dust and vehicle emissions. Water shall be applied to dirt surfaces to minimize visible dust. Rehabilitation activities shall not be conducted during high wind warnings. Work shall be suspended if watering is insufficient to prevent visible dust. Vehicles shall be washed if visible dust accumulates on the outside or undercarriage. Motorized vehicles and equipment shall be kept in good operating condition per manufacturer specifications and not allowed to idle.

To the extent feasible, the spread of invasive non-native weed species shall be avoided by clean vehicles/equipment and limiting the area of disturbance. To limit the potential for the spread of noxious weeds, before entering the proposed work area, project vehicles shall be clean. All vehicles shall be inspected daily prior to entering the work area to ensure that they are free of mud, dirt, and vegetation. Those not clean shall be required to be washed at an offsite vehicle wash station before entering the proposed work area.

Biological Monitors shall inspect visible restoration segment prior to ground disturbance activities for presence of target noxious weeds.

To avoid impacts to sensitive biological resources, biological monitoring of all rehabilitation shall be performed during implementation of the proposed activities. All workers shall be trained to recognize desert tortoise and other important sign, and to notify the Biological Monitor of any tortoise sign observations.

The approved Biological Monitor shall remain onsite during restoration activities to monitor for compliance with federal agency requirements. The Biological Monitor shall have the authority to stop work in the immediate vicinity of a resource in jeopardy, if necessary. Biological Monitors shall assure that all project-generated trash and food items are placed in closed containers and removed daily. The proposed project activities shall limit the disturbance area to the minimum required to perform the work. Project personnel shall carefully check under parked vehicles and equipment for desert tortoises before operation. A USFWS-approved Authorized Biologist shall only move desert tortoises found in imminent danger to a location away from danger and in accordance with the tortoise handling procedures described in the Guidelines for Handling Desert Tortoise During Construction Projects (Desert Tortoise Council, 1994).

In the event of a relocation or observation of a recently dead or injured listed species, the Biological Monitor shall notify the Designated Biologist, who shall notify BLM's Authorized Officer and USFWS immediately by phone and in no event later than noon on the business day following the event, if it occurs outside normal business hours, so that the agencies can determine what further actions, if any, are required to protect listed species. The Designated Biologist shall prepare written follow-up notification via FAX or electronic communication to these agencies within 2 calendar days of the incident and include the following information, as relevant: the date, time, location, circumstances of the incident, and the name of the approved veterinary facility where the animal was taken.

Protection measures shall be implemented to mitigate any potential adverse impacts caused by inadvertent discovery of buried cultural resources during project execution. These measures include: (1) designation of a cultural resources specialist to be on-call to investigate any cultural resources finds made during proposed activities; (2) implementation of a construction worker training program; (3) procedures for halting work due to inadvertent discovery of archaeological deposits or human remains; (4) procedures for evaluating an inadvertent archaeological discovery; and (5) procedures to mitigate adverse impacts on any inadvertent discovery of National Register of Historic Places eligible archaeological resources.

Maintenance activities shall consist of irrigation of transplanted vegetation and management of areas where non-native vegetation has been removed. The restoration effort shall also be monitored to assess the effectiveness of the restoration, and additional restoration efforts shall be conducted as needed to achieve the objectives of the proposed action over a five-year period. Restoration status reports shall be submitted to the BLM annually.

Compensation Timing

The compensation requirements shall be completed no more than 18 months following the start of project construction.

MM-Wild-9: Night Lighting. The Applicant shall minimize night lighting during construction by using shielded directional lighting that is pointed downward thereby avoiding illumination to adjacent natural areas and the night sky.

MM-Wild-10: Raven Control Plan. The Applicant shall implement their Raven Control Plan (First Solar 2012h) for the project. The Raven Control Plan shall identify the purpose of conducting raven control and include, at a minimum, training on how to identify raven nests and how to determine whether a nest belongs to a raven or a raptor species; describe the seasonal limitations on disturbing nesting raptors; describe raven control methods to be employed (e.g. perching and nesting deterrents); and describe procedures for documenting the activities on an annual basis. The plan shall provide details on the specific measures for storage and disposal of all litter and trash to discourage scavengers that may prey on the desert tortoise. The Applicant shall include in the trash abatement program a provision to require trash containers or bags be in or affixed to all project vehicles. All trash, including food scraps and cigarette butts, shall be placed immediately into a raven-proof container on the ROW for weekly removal or be placed in a crew vehicle trash container that shall removed daily. Trash shall not be discarded onto the ROW.

MM-Wild-11: Bird and Bat Conservation Strategy. The Applicant shall implement their Bird and Bat Conservation Strategy (First Solar 2012g*), which includes measures for protection and monitoring of golden eagles.* The document includes measures to identify resident and migratory birds, and bat species that could potentially be present, identifies project-related activities that could affect individuals or habitat, defines measures to be used to minimize the potential for impacts, and establishes a monitoring program to evaluate the strategy.

The *Bird and Bat Conservation Strategy also serves as* an Eagle Conservation Plan to address Stateline facility impacts to golden eagles. The Eagle Conservation Plan *was* prepared in accordance with the Draft Eagle Conservation Plan Guidance (USFWS 2011c). The Eagle Conservation Plan describes the golden eagle studies completed for the proposed facility; a risk analysis; advanced conservation practices to be implemented during operations (if needed), including a description of the adaptive management strategy for the proposed facility and compensatory mitigation; and post-construction monitoring and reporting procedures for golden eagles.

MM-Wild-12: Bird breeding season. *The Applicant's Bird and Bat Conservation Strategy (First Solar 2012g) includes measures to* mitigate construction impacts to MBTA species. The Applicant would perform vegetation removal prior to MBTA nesting season, implement seasonal buffers, and adhere to timing restrictions. Timing restrictions and buffers would be cooperatively determined by the agencies (USFWS, BLM, and CDFW). Vegetation within a disturbance area that may support active nests shall only be removed during the non-nesting season (approximately September-March). If this is not possible, a pre-construction nest survey must be conducted by a qualified biologist to determine the presence of any active nests. If an active nest *(defined as a nest showing supporting evidence of new material having been added during the season)* is identified within the project area, it must be immediately protected until the young have fledged from the nest or the nest becomes inactive. Work can commence in adjacent areas, but an appropriate "no-occupancy" buffer zone must be established to protect the nest and its inhabitants until fledging. The size of the buffer zone is species and habitat dependent, and should be determined in coordination with the BLM, USFWS and CDFW. Minimum buffer zones are typically 50 feet and they may be larger for listed species or raptors. Sound or visual barriers may be erected in coordination with biological monitoring if necessary.

MM-Wild-13: **Management of Temporary Water Storage Ponds.** Temporary water storage ponds shall be fitted with protective netting or other structures, as required by CDFW, to eliminate their use as a water source by avian species. The design and construction of the ponds will use the following:

- Anti-perching devices will be installed around the perimeter of each pond to exclude ravens and other birds from accessing the edge of the ponds;
- Ponds will be lined to avoid infiltration and re-surfacing of open water outside of the pond area;
- The ponds will be covered with netting *or other structures* to reduce avian access;
- Ponds will operate only for the minimum amount of time necessary to complete construction in the area they were intended to support, and will be closed once construction in each area is completed;
- Monitoring of the ponds and the integrity of the netting*/structures* will be performed.

The Applicant shall consult with BLM, USFWS, and CDFW regarding appropriate netting material and other design requirements.

MM-Wild-14: **Compliance Reporting**. All encounters with special status species shall be immediately reported to the Designated Biologist, who shall record the following information:

- Species name;
- Location (narrative and maps) and dates of observations;
- General condition and health, including injuries and state of healing;
- Diagnostic markings, including identification numbers or markers; and
- Locations moved from and to (if applicable).

Within 60 days following project completion, the applicant shall submit a post-construction monitoring report to the BLM and USFWS. The report shall document the effectiveness of each avoidance and minimization measure; the actual acreage disturbed by project activities by habitat type; the number of individual special status species observed during construction; the number of individuals killed, harmed, harassed, or injured in accordance with the incidental take statement; and any other pertinent information. The report shall also make recommendations for modifying avoidance and minimization measures in order to enhance species protection in the future.

MM-Wild 15: Desert Kit Fox Protection. *To avoid direct impacts to desert kit fox, the Applicant shall implement their Desert Kit Fox and American Badger Monitoring and Management Plan (First Solar 2013b). The Plan shall include the following measures:*

1. ***Prepare Desert Kit Fox Management Plan:*** *At least 45 days prior to construction, the Applicant shall prepare a Desert Kit Fox Management Plan that: 1) incorporates desert kit fox census and health survey findings from the clearance surveys into a cohesive management strategy that minimizes disease risk to kit fox populations; 2) specifically identifies preconstruction survey methods for kit foxes in the Project area; 3) describes preconstruction and construction-phase relocation methods from the site, including the possibility for passive and active relocation from the site (and outlines identified CDFW permit and MOU requirements for active relocation), and; 4) coordinates survey findings prior to and during construction to meet the information needs of wildlife health officials in monitoring the health of kit fox*

populations. The Plan shall include contingency measures that would be performed if canine distemper were documented in the Project area or in potential relocation areas, and measures to address potential kit fox reoccupancy of the site. The contents and requirements of the Plan shall be subject to review and approval by the BLM Authorized Officer in consultation with USFWS and CDFW.

2. ***Implement Desert Kit Fox Management Plan:*** *If canine distemper is not identified in the Project area or relocation areas during baseline surveys, the mitigation strategy may utilize passive means or active means with appropriate CDFW authorization to relocate kit foxes from the site. The approach below assumes that canine distemper is not detected during baseline surveys.*

a. Pre-Construction Surveys: Biological Monitors shall conduct pre-construction surveys for desert kit fox no more than 30 days prior to initiation of construction activities. Surveys shall also consider the potential presence of active dens within 100 feet of the project boundary (including utility corridors and access roads) and shall be performed for each phase of construction. If dens are detected each den shall be classified as inactive, potentially active, or definitely active.

b. Inactive dens that would be directly impacted by construction activities shall be excavated by hand and backfilled to prevent reuse by kit fox.

c. Potentially and definitely active dens that would be directly impacted by construction activities shall be monitored by the Biological Monitor for five consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) and/or infrared camera stations at the entrance.

d. If no tracks are observed in the tracking medium or no photos of the target species are captured after three nights, the den shall be excavated and backfilled by hand.

e. If tracks are observed, the den shall be progressively blocked with natural materials (rocks, dirt, sticks, and vegetation piled in front of the entrance) for the next three to five nights to discourage the kit fox from continued use. After verification that the den is unoccupied it shall then be excavated and backfilled by hand to ensure that no kit fox are trapped in the den.

f. If an active natal den (a den with pups) is detected on the site, the BLM Authorized Officer and CDFW shall be contacted within 24 hours to determine the appropriate course of action to minimize the potential for animal harm or mortality. The course of action would depend on the age of the pups, location of the den on the site (e.g., is the den in a central area or in a perimeter location), status of the perimeter site fence (completed or not), and the pending construction activities proposed near the den. A 500-foot no-disturbance buffer shall be maintained around all active dens.

g. The following measures are required to reduce the likelihood of distemper transmission:

i. No pets shall be allowed on the site prior to or during construction, with the possible exception of kit fox scat detection dogs during preconstruction surveys, and then only with prior CDFW approval;

ii. Any kit fox hazing activities that include the use of animal repellents such as coyote urine must be cleared through CDFW prior to use, and;

iii. Any sick or diseased kit fox, or documented kit fox mortality shall be reported to CDFW and the BLM Authorized Officer within 24 hours of identification. If a dead kit fox is observed, it shall be retained and protected from scavengers until CDFW determines if the collection of necropsy samples is justified.

Relocation sites on BLM administered lands remain subject to public land laws, including FLPMA.

MM-Wild 16: Burrowing Owl Mitigation Plan. *The Applicant shall prepare and implement a final Burrowing Owl Mitigation Plan. The Plan shall be approved by the BLM AO in consultation with USFWS and CDFG, and shall:*

a. identify suitable sites as close as possible to the Project site, and within 1 mile of the Project Disturbance Areas for creation or enhancement of burrows prior to passive relocation efforts;

b. provide guidelines for creation or enhancement of at least two natural or artificial burrows per relocated owl;

c. provide detailed methods and guidance for passive relocation of burrowing owls occurring within the Project disturbance area; and

d. describe monitoring and management of the passive relocation effort, including the created or enhanced burrow location and the project area where burrowing owls were relocated from and provide a reporting plan.

e. include the following elements related to artificial burrow relocation:

i. A brief description of the project and project site pre-construction;

ii. The mitigation measures that will be implemented;

iii. Potential conflicting site uses or encumbrances;

iv. A comparison of the occupied burrow site(s) and the artificial burrow site(s) (e.g., vegetation, habitat types, fossorial species use in the area, and other features);

v. Artificial burrow(s) proximity to the project activities, roads and drainages;

vi. Artificial burrow(s) proximity to other burrows and entrance exposure; Photographs of the site of the occupied burrow(s) and the artificial burrows;

vii. Map of the project area that identifies the burrow(s) to be excluded as well as the proposed sites for the artificial burrows;

viii. A brief description of the artificial burrow design;

ix. Description of the monitoring that will take place during and after project implementation including information that will be provided in a monitoring report.

x. A description of the frequency and type of burrow maintenance

f. address the following elements related to the exclusion plan:

i. Confirm by site surveillance that the burrow(s) is empty of burrowing owls and other species by use of a fiber-optic endoscope or comparable device;

ii. Describe the type of scope and appropriate timing of scoping to avoid impacts;

iii. Describe occupancy factors to look for and what will guide determination of vacancy and excavation timing (e.g., one-way doors should be left in place 48 hours to ensure burrowing owls have left the burrow before excavation, visited twice daily and monitored for evidence that owls are inside and can't escape);

iv. Identify how the burrow(s) will be excavated (excavation using hand tools with refilling to prevent reoccupation is preferable whenever possible (may include using piping to stabilize the burrow to prevent collapsing until the entire burrow has been excavated and it can be determined that no owls reside inside the burrow);

v. Describe removal of other potential owl burrow surrogates or refugia on site; Photographing the excavation and closure of the burrow to demonstrate success and sufficiency;

vi. Describe required monitoring of the exclusion site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use to avoid take;

vii. Identify how the impacted site will continually be made inhospitable to burrowing owls and fossorial mammals (e.g., by allowing vegetation to grow tall, heavy disking, or immediate and continuous grading) until development is complete.

If an active burrowing owl burrow is detected within 500 feet from the Project disturbance area the following avoidance and minimization measures shall be implemented:

a. Establish Non-Disturbance Buffer: Fencing shall be installed at a 250-foot radius from the occupied burrow to create a non-disturbance buffer around the burrow. The non-disturbance buffer and fence line may be reduced to 160 feet if all Project-related activities that might disturb burrowing owls would be conducted during the non-breeding season (September 1st through January 31st). Signs shall be posted in English and Spanish at the fence line indicating no entry or disturbance is permitted within the fenced buffer.

b. Monitoring: If construction activities would occur within 500 feet of the occupied burrow during the nesting season (February 1 to August 31st) the Designated Biologist or Biological Monitor shall monitor to determine if these activities have potential to adversely affect nesting efforts, and shall make recommendations to minimize or avoid such disturbance.

Relocation sites on BLM administered lands remain subject to public land laws, including FLPMA.

4.22.12 Residual Impacts After Mitigation

Implementation of the avoidance, minimization, and mitigation measures described in Section 4.22.12 would *avoid or minimize* the direct and indirect impacts to wildlife resources on the Stateline project site. Under CEQA, implementation of the avoidance, minimization, and mitigation measures would mitigate impacts to wildlife resources to a level below significance. Implementation of the required mitigation would not result in any additional impacts to wildlife resources. No residual impacts to wildlife resources would occur with the implementation of the avoidance, minimization, and mitigation measures.

The Proposed Action and three other action alternatives would potentially have adverse impacts on individuals and habitat of *16* special status wildlife species. For most of these species, their presence within the project area is speculative or limited, and impacts would be minimal. Mitigation measures for bird and bat species would include measures that would require avoidance of nesting birds and development of a Bird and Bat Conservation Strategy. With implementation of these measures, there would be no residual impacts to these species. For the desert tortoise, take in the form of harassment of an undetermined number of individuals would result because Authorized Biologists would conduct pre-clearance surveys and pick up

and move tortoise out of harm's way. However, implementation of APMs and mitigation measures required by BLM for protection of wildlife and other resources would reduce direct impacts, and therefore the potential for residual impacts, to the tortoise. These include APM-Wild-1 (desert tortoise protection measures in NEMO Plan Amendments), APM-Wild-2 (relocation of tortoises), APM-Wild-3 (tortoise exclusion fencing), MM-Wild-1 (Oversight by Designated Biologist), MM-Wild-2 (Oversight by Authorized Biologists and Biological Monitors), MM-Wild-3 (WEAP), MM-Wild-4 (Delineation of Sensitive Areas), MM-Wild-5 (Use of Existing Routes and Speed Limits), MM-Wild-6 (Pre-Construction Surveys), and MM-Wild-7 (Desert Tortoise Handling Requirements).

Without mitigation, the proposed Stateline facility would contribute to the cumulatively substantial losses of wildlife resources within the Ivanpah Valley. The avoidance and minimization measures as well as compensatory mitigation to offset direct, indirect, and cumulative impacts to wildlife resources would assure compliance with state and federal laws, and the cumulative impacts would have no substantially adverse effects following mitigation.

4.23 Irreversible and Irretrievable Commitment of Resources

The BLM NEPA Handbook (H-1790-1 Sec. 9.2.9), the NEPA Guidelines (40 CFR 1502.16), and CEQA Guidelines Section 15126.2 require a discussion of any irreversible or irretrievable commitments of resources which would be caused by implementation of the proposed Stateline facility or one of the action alternatives; the relationship between short-term uses and long-term productivity of the environment; and any growth-inducing impacts.

Resources irreversibly or irretrievably committed to a proposed action are those used on a long-term or permanent basis. This includes the use of nonrenewable resources such as metal, wood, fuel, paper, aggregate and other natural resources. These resources are considered irretrievable in that they would be used for a proposed action when they could have been conserved or used for other purposes. Another irreversible or irretrievable commitment of resources is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

The Stateline Solar Farm project would irretrievably commit resources over the 30-year life of the project. Construction of the proposed Stateline facility would commit nonrenewable resources during project construction and ongoing utility services during project operations. During project operations, oil, gas, and other nonrenewable resources would be consumed for maintenance purposes, although on a limited basis. After 30 years, the Stateline facility could be decommissioned and the land returned to its pre-project state, or the facility owners may wish to work with the BLM to replace the old facilities with a new re-powering project on the same site. In the event that the project is decommissioned, potentially some of the resources used in construction of the facility could be retrieved. However, full site recovery to its pre-project state may not be possible given the 30-year life-span of the Stateline facility and the many unknown variables that could affect the site. Open desert lands and sensitive desert habitats have potentially lengthy recovery time from disturbances such as solar development.

The Stateline facility is a renewable energy project intended to generate solar energy to reduce reliance on fossil fuels. Over the 30-year life of the Stateline facility, this renewable energy project would contribute incrementally to the reduction in demand for fossil fuel used to generate electricity, thereby resulting in the project having a beneficial effect of the commitment of nonrenewable resources.

4.24 Short-Term Uses of Man's Environment and the Maintenance/Enhancement of Long-Term Productivity

The BLM NEPA Handbook (H-1790-1 Sec. 9.2.9) and the NEPA Guidelines (40 CFR 1502.16) require a discussion of the relationship between short-term uses and long-term productivity of the environment from implementation of the proposed Stateline facility or one of the action alternatives. "Short term" refers to the total duration of project construction, whereas "long term" refers to an indefinite period beyond the construction of the project. The specific impacts of the proposed project vary in kind, intensity, and duration according to the activities occurring at any given time. The proposed project involves tradeoffs between long-term productivity and short-term uses of the environment.

The short-term uses of the environment as a result of the proposed Stateline Solar Farm facility and the other action alternatives include those typically found with solar energy development. Short-term impacts associated with construction activities described elsewhere in Chapter 4, Environmental Consequences, include air and greenhouse gas emissions, use of groundwater, increased noise and traffic, and changes to local employment and tax revenues associated with construction. These impacts would generally cease upon completion of project construction, and there would be no residual effects from these impacts. These can be compared to the long-term benefits of the Proposed Action and the other action alternative, all of which would provide for the production of clean, renewable energy consistent with Federal and State goals to increase production of renewable energy to help reduce dependence on fossil fuels.

As discussed earlier in Section 4.23, Irreversible and Irretrievable Commitment of Resources, the Proposed Action and alternatives could damage sensitive desert habitats, which in turn could adversely affect the long-term productivity of the area. However, these action alternatives would all also provide a long-term benefit by generating electric power without any increase in the use of non-renewable resources, such as fossil fuels, which would result in a benefit to air quality and a reduction in carbon-based emissions.

4.25 Growth-Inducing Impacts

The BLM NEPA Handbook (H-1790-1 Sec. 9.2.9), the NEPA Guidelines (40 CFR 1502.16), and CEQA Guidelines Section 15126.2 require a discussion of growth-inducing impacts that potentially would result from implementation of the Proposed Action or alternatives. Specifically, CEQA Guidelines Section 15126.2(d) requires a discussion of the ways in which the project could foster economic or population growth, or induce additional housing, either directly or indirectly in the surrounding environment. NEPA regulations also provide for discussing the growth-inducing impacts of a project. As stated in 40 C.F.R. § 1508.8(b), "indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems." The discussion of growth-inducing impacts also must address how a project may remove obstacles to growth, or encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively.

Typically, a project's growth-inducing potential would be considered significant if it leads to population increases above what is assumed in local and regional land use plans, or in projections made by regional planning authorities. Significant growth-inducing impacts also could occur if a project provides infrastructure or service capacity that would accommodate growth levels beyond those permitted by local or regional plans and policies. Increased development and growth in an area depend on a variety of factors, including employment and other opportunities, availability of developable land, and availability of infrastructure, water, and power resources.

As discussed in Section 4.13, Social and Economic Issues, the proposed project's construction and operation phase labor needs would be drawn from Clark County, Nevada and San Bernardino County, California. The proposed project would require less than one percent of the total construction workforce of these two counties. Further, research shows that construction workers typically commute up to two hours one way to a job site rather than relocating. Because of the size of the available construction work force and the expected minimal in-migration of construction workers, project construction would be expected to have minimal impacts on population growth. Project operation phase employment levels (seven to 10 fulltime workers) are so low as to have minimal impacts on the population levels and the availability of housing in the project area and thus growth-inducing impact potential also would be minimal.

The Proposed Action or alternatives would not remove barriers to growth and development because of project-related changes in land use designations or providing utilities and/or access to previously undeveloped areas. No lands would be converted to residential or commercial use by the project; the transmission lines associated with project development would merely connect project electrical output to the grid and thus would not provide service to previously unserved areas; no new roadways would be constructed that would provide access to nearby areas that then would be opened up to residential or commercial development.

Because insufficient supplies of electricity would inhibit growth (and ongoing economic activity as well), it could be argued that the new electrical generating capacity represented by the project is growth-inducing because it removes the obstacle to growth that would result from insufficient electrical supplies. However, it should be noted that the *Federal and* California legal mandates to increase the use of renewable energy sources are not necessarily growth-related.

In 2006, the California passed the California Global Warming Solutions Act (AB 32), which required the state to reduce emissions of CO_2 and other GHGs to 1990 emission levels (a 25 percent reduction) by 2020. SB 1368 was enacted in 2006, which prohibits California electric utilities from constructing power plants or entering into long-term purchase contracts with facilities that do not meet the GHG emissions standard. The California RPS legislation requires

investor-owned utilities (IOUs), publicly-owned utilities, and energy service providers to increase purchases of renewable energy such that at least 33 percent of retail sales are procured from renewable energy resources by December 31, 2020. The California mandates do not apply only to incremental power generation capacity that does not yet exist. The required shift in generation to renewables is not merely to power future growth – it also applies to the generating capacity needed to continue to serve the current level of demand on an ongoing basis.

In addition, utility organizations are obligated to be able to meet the current and projected future electrical demand of their customers – having insufficient capacity is not an option. Because electrical demand is projected to increase in the coming years, the utilities need additional capacity to meet the projected demand, as well as to replace aging generating capacity that must be retired. This need for additional capacity is forecasted with or without implementation of the proposed project.

In short, the Stateline Solar Farm Project would contribute to California's ability to change its electrical generating source mix to meet legal mandates (renewable energy and greenhouse gases), would help the State of California to meet its obligations under AB32*, and would help BLM meet its obligations under Executive Order 13212, Executive Order 3285A1, and The President's Climate Action Plan*. It also and would help satisfy both current levels and projected future levels of demand for electricity. For these reasons, the increased electrical capacity represented by the project would not be considered to have significant growth-inducing impacts.

4.26 Unavoidable Impacts

The analysis contained in Sections 4.2 through 4.22 indicates that the potential environmental effects from implementation of the Proposed Project would cause significant impacts, although most of those can be reduced to a level that is below significant with mitigation measures. However, there are some impacts that cannot be avoided or reduced to less than significant and are unavoidable. These are summarized here.

Air Resources

Onsite construction activities for the proposed project would produce NO_x and PM_{10} emissions that exceed MDAQMD significance thresholds. Mitigation measures would reduce these emissions somewhat, but would not reduce emissions to a level less than the MDAQMD significance thresholds. The emissions under all action alternatives would exceed the thresholds. Consequently, construction-related emissions for the proposed project would be an unavoidable significant air quality impact under CEQA, and an adverse impact under NEPA, under all action alternatives. However, the impact would be temporary, and would cease at the completion of construction.

Noise

Noise from construction traffic, as experienced at a single residence at Yates Well Road, would be an unavoidable significant impact under CEQA, and as adverse impact under NEPA, under all action alternatives. The impact would be temporary, and would cease at the completion of construction.

Transportation and Public Access

Construction traffic and decommissioning traffic would cause the level of service (LOS) on Friday during peak traffic volume to degrade to LOS F. This would constitute a significant impact under CEQA, and an adverse impact under NEPA. Mitigation measures MM-Trans-1 and MM-Trans-2 would reduce the impact and the impact would be temporary; however, it would remain significant and unavoidable.

Visual Resources

The proposed Stateline facility would be visible in the same field of view as many of the other man-made developments in the valley, including Ivanpah SEGS, numerous transmission lines, and the Primm Valley Golf Course. The introduction of industrial character and structural visual contrast would result in substantial adverse effects on scenic vista and would degrade the existing visual character of the site and its surrounding landscape. The resulting cumulative visual impact would be significant and unavoidable under CEQA, and adverse under NEPA. The proposed Stateline facility plus the reasonably foreseeable projects would contribute to the conversion of natural desert landscapes to landscapes with prominent industrial character (complex industrial forms and lines and surface textures and colors not found in natural desert landscapes).

Although the overall cumulative visual impact would be significant and unavoidable, the views of the Stateline facility itself would be much less prominent than those of the adjacent Ivanpah SEGS facility, Primm Valley Golf Course, and transmission towers, each of which includes

elements that have a greater height above the ground surface than would the Stateline facility. Therefore, the contribution of the proposed Stateline facility to the overall impact would not be cumulatively considerable under CEQA.

5.0 Consultation, Coordination, and Public Involvement

5.1 Interrelationships

The Bureau of Land Management's (BLM's) authority over the proposed Desert Stateline Solar Farm project includes*, among other things,* the Federal Land Policy and Management Act (FLPMA; 43 United States Code [U.S.C.] 1701 et seq.), BLM's Solar Energy Development Policy of October 7, 2010 (Instruction Memorandum [IM] 2011-003), and BLM renewable energy guidance as specified in BLM IM-2011-059, 2011-060, and 2011-061. The FLPMA authorizes BLM to issue Right-of-Way (ROW) grants for renewable energy projects. *The President's Climate Action Plan, announced on June 25, 2013, sets a new goal for the Department of the Interior to permit enough renewable electricity generation from public lands to power more than 6 million homes by 2020. This goal will require the approval of 20,000 MWs of renewable energy projects on the public lands by 2020.*

5.1.1 U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) has jurisdiction to protect the aquatic ecosystem, including water quality and wetland resources under Section 404 of the Clean Water Act. Under that authority, the USACE regulates the discharge of dredged or fill material into waters of the U.S., including wetlands, by reviewing proposed projects to determine whether they may impact such resources and, thereby, are subject to Section 404's permit requirement. Throughout the Plan Amendment (PA) and Environmental Impact Statement/Environmental Impact Report (EIS/EIR) process, the Applicant and BLM have provided information to the USACE to assist the agency in making a determination regarding its jurisdiction and need for a Section 404 permit.

Following consultation with the USACE and California Department of Fish and Game (CDFG), the Applicant developed a Jurisdictional Delineation assessment (LSA 2011a). Both Federal and State jurisdictional delineation data was collected along 10 transects (1,500 feet apart), which were set up north-to-south across the site (perpendicular to existing desert washes). The entire length of each transect was surveyed on foot and global positioning system data was recorded at each point where an active ephemeral wash intersected the transect line. Jurisdictional features were mapped by tracing data on plastic overlaid on high-resolution aerial photographs.

Ivanpah Lake, which spans the California-Nevada state boundary, is an interstate water, water of the United States (WUS), and is subject to USACE jurisdiction. However, because it is dry the majority of the time, it is not considered a navigable water. Because ephemeral washes are tributary to Ivanpah Lake, which is not a traditional navigable water, the drainages would not be subject to Section 404 jurisdiction (LSA 2011b). *The Applicant's Jurisdictional Delineation Report (LSA 2011b) was submitted to the USACE for their determination. In a letter dated December 2, 2012, USACE concurred that the project is not subject to USACE jurisdiction under Section 404, and that a Section 404 permit is not required (Swenson 2012).*

5.1.2 California Department of Fish and Wildlife

The CDFW protects fish and aquatic habitats within the State through regulation of modifications to streambeds, under Section 1602 of the Fish and Game Code. The BLM and the Applicant have provided information to CDFW to assist the agency in its determination of the impacts to streambeds, and identification of permit and mitigation requirements. The Applicant will file a Streambed Alteration Agreement with CDFW. In total, the study area includes approximately 490 acres of resources (streambed and lake) that are potentially subject to CDFW jurisdiction.

CDFW also has the authority to regulate potential impacts to species that are protected under the CESA (Fish and Game Code Section 2050, et seq.). *With respect to impacts to desert tortoise, the* Applicant has indicated that it will file the appropriate notice, incidental take permit application, or request for memorandum of understanding, as appropriate based on potential impacts associated with the Proposed Action.

5.1.3 Mojave Desert Air Quality Management District

The Proposed Action is located within the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD), which reviews the plans and specifications for construction in the project area. *As required in mitigation measure MM-Air-1, the Applicant would implement their Air Quality Construction Management Plan (First Solar 2012c) that describes the fugitive dust control measures that would be implemented and monitored at all locations of proposed facility construction. The plan would be submitted to MDAQMD no less than 60 days prior to the start of construction, and the* MDAQMD would assess emissions and possible air contamination resulting from construction and operational activities (e.g., road dust, windblown contaminants, and emissions from construction activities).

5.1.4 San Bernardino County

Under Memorandum of Understanding (MOU) Agreement No. 03-1211 between BLM and the County, facilities requiring groundwater wells fall under the County's jurisdiction, and would therefore be required to comply with County Ordinance No. 3872 regarding permitting and monitoring of groundwater extraction wells. Because the Proposed Action would include installation of groundwater extraction wells, implementation of the proposed facility would require discretionary approval from San Bernardino County with respect to issuance of a well permit from the Environmental Health Services Department. Because the County must take a discretionary action, the County will be responsible for certifying the Final EIS/EIR after reviewing the document for consistency with California Environmental Quality Act (CEQA) requirements (CEQA Guidelines §15090). If the Final EIS/EIR demonstrates that the Proposed Action would have significant and unavoidable (not mitigable) impacts and the County decides to approve the project, then the County will need to adopt a "Statement of Overriding Considerations" explaining the reasons for approving the project despite its significant impacts (CEQA Guidelines §15093).

5.2 Consultation Process for ESA Section 7, NHPA Section 106, and Indian Tribes

5.2.1 ESA Section 7 Compliance

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction to protect threatened and endangered species under the Endangered Species Act (ESA; 16 U.S.C. Section 1531 et seq.). Formal consultation with the USFWS under Section 7 of the ESA is required for any federal action that may adversely affect a federally-listed species. This consultation*, associated with the desert tortoise,* has been initiated through a request by the BLM to initiate formal consultation and the submittal of a Biological Assessment (BA). Following review of the BA and impacts of the Proposed Action, the USFWS *has issued* a Biological Opinion (BO*), dated September 30, 2013)* that specifies *reasonable and prudent measures and terms and conditions* which must be implemented for *the desert tortoise*.

5.2.2 NHPA Section 106 Compliance

Section 106 of the National Historic Preservation Act (NHPA; 16 U.S.C. 470, *et seq.), as amended through its implementing regulations codified in "Protection of Historic Properties" (36 CFR Part 800),* requires a federal agency with jurisdiction over a project *(referred to as an undertaking under the NHPA)* to *consider* the effect of the proposed project*, in consultation with the State Historic Preservation Office, interested tribes, and other parties,* on properties included on, or eligible for, the National Register of Historic Places (NRHP). Federal agencies must also provide the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the effects of the proposed project to those properties*. Having determined that the Proposed Action constitutes an "undertaking" as defined in 36 CFR Part 800.16(y) and involves the type of activity that could affect historic properties (36 CFR Part 800.3(a)), the BLM, as lead federal agency for the project, has the statutory responsibility for compliance with provisions of Section 106 of the NHPA (36 CFR Part 800.2(a)(2)).*

The basic steps in the Section 106 process are described below along with a corresponding summary paragraph presenting BLM's compliance with the process:

Step 1: Identification and Evaluation of Historic Properties (Cultural Resources). Properties within a project's area of potential effect (APE) are identified with input from the State Historic Preservation Officer (SHPO), Indian tribes and other consulting parties, and evaluated for eligibility to the NRHP by the BLM in consultation with the SHPO. See 36 CFR § 800.4. BLM applies NRHP criteria for eligibility for listing found at 36 CFR part 60.4, in conformance with the Secretary of the Interior's Standards and Guidelines for Evaluation (48 Federal Register 44723-44726). In general, NRHP eligibility criteria include:

"The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or

B. That are associated with the lives of persons significant in our past; or

C. That embody the distinctive characteristics or a type, period, method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. That have yielded, or may likely yield, information important in prehistory or history."

A literature review, record search, built environment survey, and archaeological inventory has been commissioned to identify historic properties within the Stateline project APE. A Native American Heritage Commission Sacred Lands File search was also acquired which included a list of tribal individuals with whom to consult regarding the project and potential effects to sacred sites. The BLM utilized and expanded that list *for* Section 106 consultation with Indian Tribes. *Consulation with Indian Tribes ensures* that ethnographic resources and places of traditional cultural or religious concern are also taken into account.

Step 2: Assessment of Effects. BLM determines whether or not the undertaking will affect historic properties listed in or eligible for listing in the NRHP (36 CFR § 800.4(d)). When BLM determines that historic properties will be affected, the BLM must assess whether such effects will be adverse through by applying the criteria outline at 36 CFR § 800.5(a)(1). "Effect" is defined in the regulations as an "alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register" (36 CFR § 800.16(i)). An effect is

deemed to be adverse if when the effect may "alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association" (36 CFR § 800.5(a)(1)). The BLM must provide documentation of the determinations of eligibility and findings of effect to the SHPO and notify Indian Tribes and other consulting parties.

In the case of the Proposed Action and alternatives, all efforts have been made to avoid direct effects to historic properties. *The BLM's determinations and findings, provided in a letter to the SHPO dated November 1, 2012, concluded that there will be no adverse effects on historic properties from this undertaking.*

Step 3: Resolution of Adverse Effects. Through consultation with the SHPO, Indian tribes, and consulting parties, the BLM seeks to resolve the potential adverse effects of a project by developing and evaluating alternatives or modifications to the project that could avoid, minimize, or mitigate adverse effects on historic properties and documenting the result in a MOA or Programmatic Agreement (36 CFR §800.6). *Because the BLM determined that no adverse effects would occur, no MOA or Programmatic Agreement is required for the Project.*

5.2.3 Tribal Consultation

In addition to the Section 106 consultation process, the BLM consults with Indian Tribes on a government-to-government basis in accordance with several authorities including National Environmental Policy Act (NEPA), the NHPA, the American Indian Religious Freedom Act, and Executive Order 13007. Under Section 106 of the NHPA, the BLM consults with Indian Tribes as part of its responsibilities to identify, evaluate, and resolve adverse effects on historic properties affected by BLM undertakings.

The BLM notified tribes and requested government-to-government consultation by letter on November 21, 2007, at the earliest stages of application review. The BLM described the preliminary results of the Class III archaeological survey by letter on December 23, 2010. Tribes were sent a notification of the publication of the NOI on August 19, 2011. The BLM notified the tribes about the proposed geotechnical testing for the project in a letter dated November 23, 2011. The final archaeological survey reports and the agency determinations and findings were provided to the Tribes concurrently with the notification to SHPO. The following ten Federally recognized Indian tribes have been invited to consult on the Project:

- Chemehuevi Indian Tribe
- Colorado River Indian Tribe
- Fort Mojave Indian Tribe
- Las Vegas Paiute Tribe
- Moapa Band of Paiute Indians
- Morongo Band of Mission Indians
- Ramona Band of Mission Indians
- San Manuel Band of Mission Indians
- Timbisha Shoshone Tribe
- Twenty-Nine Palms Band of Mission Indians

The following three non-federally recognized Indian tribes or Tribal Organizations have also been contacted and invited to consult on the Project:

- *Pahrump Paiute Tribe*
- *San Fernando Band of Mission Indians*
- *Serrano Nation of Indians*

All letters included a request that the Tribes identify any areas to which they attach cultural or religious significance so that these sites may be considered in the environmental review of the proposed project. The Pahrump Paiute Tribe indicated their opposition to the project by letter on March 19, 2012. The BLM has received no other responses to our requests to consult on the Stateline Project, and no areas of Tribal significance have been identified.

Raymond Lee, BLM Needles Field Manager, and other BLM staff held a Tribal Representatives Open House at the BLM Needles Field Office on January 17, 2013. The following individuals were in attendance:

- *Edward (Tito) D. Smith, Chairperson of the Chemehuevi Indian Tribe*
- *Timothy Williams, Chairperson of the Fort Mohave Indian Tribe*

Wilene Holt, Museum Director of the Colorado River Indian Tribe In addition to the above correspondence, First Solar with the approval of the BLM, sent letters to the above Tribes on April 24, 2013 inviting them to attend an informational meeting in Nipton, CA and field visit to the Stateline Solar Farm Project area. The informational meeting occurred on May 9, 2013 and included a tour of the Stateline Solar Farm Project area, a slide presentation and question-and-answer session in Primm, NV. The meeting was attended by one representative each from the Las Vegas Paiute Tribe, the San Manual Band of Mission Indians and the Timbisha Shoshone Tribe. Attendees also included First Solar representatives, ECORP archaeologists, and the BLM Needles Field Office archaeologist.

5.3 Implementation, Monitoring, and Enforcement

5.3.1 Implementation

The BLM will continue to involve and collaborate with the public during implementation of this Proposed Action. Opportunities to become involved during implementation and monitoring could include development of partnerships and community-based citizen working groups. The BLM invites citizens and user groups within the vicinity of the Proposed Action to become actively involved in implementation and monitoring of its decisions to the extent allowable under existing law. The BLM and citizens could collaboratively develop site-specific goals and objectives that mutually benefit public land resources, local communities, and the people who live, work, or play on the public lands.

5.3.2 Monitoring

The BLM would monitor activities throughout the life of the Proposed Action to ensure that decisions are implemented in accordance with the approved Record of Decision (ROD) and ROW grant. Monitoring would be conducted to determine whether decisions, Best Management Practices (BMPs) and approved mitigation are achieving the desired effects. Effectiveness monitoring would provide an empirical data base on impacts of decisions and effectiveness of mitigation. Effectiveness monitoring also would be useful for improving analytical procedures for future impact analyses and for designing or improving mitigation and enhancement measures.

San Bernardino County also has an obligation under the CEQA to monitor the implementation of adopted mitigation measures within the area of its jurisdiction.

5.3.3 Enforcement and Adaptive Management

The BLM would incorporate adaptive management into mitigation for the Proposed Action. Adaptive management is a system of management practices based on clearly identified outcomes, monitoring to determine if management actions are meeting outcomes, and, if not, facilitating management changes that will best ensure that outcomes are met or to re-evaluate the outcomes (DOI 2003). This system goes beyond the traditional "predict-mitigate-implement" model in favor of the "predict-mitigate-implement-monitor-adapt" adaptive management model.

Procedures include (DOI 2003):

- Determining environmental effects of a project and identifying mitigation needs along with other permitting and regulatory requirements. Analysis should indicate where data are lacking and uncertainty exists with respect to the intended outcomes and the significance of this lack;
- Monitoring designed for adaptive management must be able to result in appropriate adjustments in project activities as the project is constructed and planned mitigation is installed;
- Striving to ensure public input into and understanding of the principles of adaptive management;
- Maintaining open channels of information to the public and affected regulatory and permitting agencies during the application of adaptive management, including transparency of the monitoring process that precedes adaptive management and the decision-making process that implements it. This involves: (a) identifying indicators of change, (b) assessing monitoring activities for accuracy and usefulness, and (c) making changes in tactics, activities and/or strategies; and
- Providing post-activity opportunity for public and affected outside agency review of adaptive management practices, including practices that were exceptions to any resource management plans or that had permitting and other regulatory requirements not satisfied by prior coordination.

Adaptive management allows agencies, in their NEPA reviews, to establish and analyze mitigation measures that are projected to result in the desired environmental outcomes, and identify those mitigation principles or measures that it would apply in the event the initial mitigation commitments are not implemented or effective (CEQ 2011).

5.4 Public Involvement

5.4.1 Introduction

Public participation is a dynamic process that continues throughout the preparation of the EIS/EIR. Scoping meetings were conducted after the publication of the Notice of Intent (NOI) and Notice of Preparation (NOP) to formally solicit public and agency input on issues to be addressed in the EIS/EIR. In addition, BLM and San Bernardino County have coordinated with affected local, state, and federal agencies on issues of concern, as described in Sections 5.1 and 5.2 above. Public and agency comments *were* also sought on the information, analysis, and conclusions presented in *the* Draft EIS/EIR. The BLM *also used* and coordinated the NEPA commenting process to satisfy the public involvement process for Section 106 of the NHPA as provided for in 36 CFR 800.2(d)(3).

The results of the scoping process for this Project are summarized below.

5.4.2 Scoping

The NOI was published in the Federal Register (FR; Volume 76, No. 150) on August 4, 2011. The County's NOP was published on August 20, 2011. BLM and San Bernardino County hosted one public scoping on Wednesday, August 31, 2011, from 6:00 pm to 8:00 pm at the Primm Valley Golf Clubhouse with a total attendance of 44 individuals. A Public Scoping Report was released for public review in November 2011 and is included as Appendix B.

Scoping Requirements

The BLM authorization of a ROW grant for the project would require a resource management land use PA to the California Desert Conservation Area (CDCA) Plan. Scoping is required by NEPA pursuant to CEQ (40 CFR 1501.7) regulations. The process ensures that significant issues, alternatives, and impacts are addressed in environmental documents and determines the degree to which these issues and impacts *are* analyzed in the EIS.

Scoping Process

The scoping process for the Stateline Solar Farm project EIS/EIR included the following:

- Publishing the NOI and NOP to prepare an EIS/EIR.
- Conducting public scoping meetings and agency consultation meetings.
- Documenting all public and agency comments received for the proposed project in a Public Scoping Report (Appendix B).

Each of these components is discussed below.

Notice of Intent

In compliance with NEPA (40 CFR 1501.7), the BLM published a NOI in the Federal Register to prepare an EIS for the Stateline Solar Farm project (FR Vol. 76, No. 150, page 47235, August 4, 2011). The BLM established a website with project information describing the various methods for providing public comment on the project, including an e-mail address where comments could be sent electronically.

Notice of Preparation

As required by CEQA Guidelines §15082 (14 California Code of Regulations [CCR] 15000 et seq.), San Bernardino County issued an NOP on August 20, 2011, that summarized the Stateline Solar Farm project and stated its intention to prepare a joint EIS/EIR, and requested comments from interested or affected parties.

Public Scoping Meeting

Notification for public scoping meetings held on August 31, 2011, at the Primm Valley Golf Course, was made available to the public on BLM's website for the Stateline project. In

addition, notices were sent to stakeholders, including the state clearinghouse; federal, state, and local agencies and organizations; local property owners, local libraries; and Native American groups.

One public scoping meeting was held on August 31, 2011, at the Primm Valley Golf Course. Presentations describing the environmental review process were delivered by representatives of the BLM and San Bernardino County. First Solar also delivered a presentation describing the project. Approximately 44 persons attended the meeting, including representatives from local and state agencies, organizations, and private citizens.

The BLM and San Bernardino County received a total of 26 comment submittals (e.g., letter, comment form, email) containing 360 individual comments during the public scoping period. Most comments came from federal agencies and other organizations with interest in the proposed project. Following the close of the public scoping period, comments were compiled and analyzed to identify issues and concerns. Comments were received on the following categories: project description; human environment issues; natural environment issues; indirect and cumulative impacts; project alternatives; and EIS/EIR administrative and permitting issues. A summary of these comments is provided in the Public Scoping Report (Appendix B). Comments received during scoping have been addressed in the analysis of impacts in this *PA and* EIS/EIR, and were also considered in the formulation of action alternatives for purposes of analysis.

Scoping Report

The BLM produced a scoping report in November 2011, which contained information received during the public scoping comment period.

5.5 Public Review of Draft EIS/EIR

The Draft EIS/EIR *was* distributed for public review and comment in accordance with NEPA and CEQA procedures. Copies were submitted to the State Clearinghouse for agency distribution. Copies of the Draft EIS/EIR were distributed to all concerned federal, state, and local agencies, environmental groups, interested individuals, and are available at area public libraries for the interested public to review.

Two Notices of Availability of the Draft EIS/EIR *were* published *in the Federal Register, one* by U.S. Environmental Protection Agency (EPA) and *one by the* BLM*. These notices gave* agencies, tribes, organizations, and the public notice of availability of this document and the opportunity to provide comment on its content. To comply with CEQA regulations, the County *also published* a Notice of Completion in a newspaper of general circulation indicating the availability of the Draft EIS/EIR regarding the Proposed Project. The County also sent a Notice of Completion to the State Clearinghouse, concerned agencies, property owners, and other concerned parties.

The filing of the Notice of Availability by the EPA *initiated* a 90-day public review and comment period to comply with *applicable* regulations, and the filing of the Notice of Completion by the County of San Bernardino *initiated* a concurrent agency and public review and comment period to comply with CEQA regulations. The dates, times and specific locations for *the* public review meeting *were* announced in advance on the BLM California website (http://www.blm.gov/ca/st/en.html) with a link to the electronic version of the document and other supporting information on the BLM, Needles Field Office website (http://www.blm.gov/ca/st/en/fo/needles.html). Likewise, the news release advertising meeting details and other EIS/EIR documents *were* electronically posted on the San Bernardino County

website (http://www.co.sanbernardino.ca.us/landuseservices/Public%20Notices/Projects/Projects.htm).

The public comment period on the Draft EIS/EIR closed on February 21, 2013. Three public comment meetings were held to provide information on the Draft EIS/EIR and solicit public comments. These meetings were held at:

- *Primm Valley Golf Club, January 9, 2013, at 2:00 pm.*
- *Primm Valley Golf Club, January 9, 2013, at 6:00 pm*
- *Holiday Inn Express, Barstow, California, January 10, 2013, at 6:00 pm.*

The public comments received were compiled, and are included as Appendix F. The comments were considered, and changes were made in the Final EIS as appropriate. The responses to public comments are provided in Appendix G.

5.6 List of Preparers

Though individuals have primary responsibility for preparing sections of the Proposed Programmatic Agreement and the EIS/EIR, the document is an interdisciplinary team effort. In addition, internal review of the document occurs throughout preparation. Specialists at the BLM's Field Office, State Office, and Washington Office reviewed the analysis and supplied information, as well as provided document preparation oversight. Contributions by individual preparers may be subject to revision by other BLM specialists and by management during internal review.

Table 5-1. List of Preparers

Name	Primary Responsibility
BLM – California Desert District Office	
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Tiffany Thomas	Cultural Resources
BLM – Needles Field Office	
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George Meckfessel	Project Management
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Julie Niceswanger	Wildlife Resources
Sean Wazlaw	Air, Traffic, and Noise Resources
Katie Broom	Public Health and Safety
Kevin Taylor	Project Description
Carol Freeman	Paleontology, Geology, and Soils Resources
Susan Provenzano	Social and Economic Conditions and Environmental Justice
Peggy Roberts	Public Participation, Social and Economic Conditions
Arrie Bachrach	Senior Technical Review, CEQA Review

Table 5-1. List of Preparers

Name	Primary Responsibility
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Matt Tennyson	Cultural Resources
Ted St. John	Vegetation Resources
Nicole Spangler	Technical Editing
Bonnie Freeman	Formatting, Production

6.0 Acronyms

^{o}C	degrees Celsius
°F	degrees Fahrenheit
$\mu g/m^3$	micrograms per cubic meter
AADT	Annual average daily traffic
AB	Assembly Bill
ac	acre
AC	Alternating current
ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
ADT	Average Daily Traffic
AIRFA	American Indian Religious Freedom Act
AML	Appropriate Management Level
amsl	above mean sea level
ANSI	American National Standards Institute
APE	area of potential effects
APM	Applicant-Proposed Measures
Applicant	Desert Stateline, LLC
AQAP	Air Quality Attainment Plan
ARB	Air Resources Board
ARPA	Archeological Resources Protection Act
asl	above sea level
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
AUM	Animal Unit Month
BA	Biological Assessment
BCC	Birds of Conservation Concern
BGEPA	Bald and Golden Eagle Protection Agency
bgs	below ground surface
BLM	Bureau of Land Management
BMP	Best Management Practices
BO	Biological Opinion
BVUSD	Baker Valley Unified School District
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
Cal/EPA	California Environmental Protection Agency
Cal ARP	California Accidental Release Program
Cal-IPC	California Invasive Plant Council
CAL Fire	California Department of Forestry and Fire Protection
Cal OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CARB	California Air Resources Board

CCR	California Code of Regulations
CCSD	Clark County School District
CDC	Centers for Disease Control
CDCA	California Desert Conservation Area
CDD	California Desert District
CDFG	California Department of Fish and Game
CDMG	California Division of Mining and Geology
CDOC	California Department of Conservation
CDOF	California Department of Finance
CdTe	cadmium telluride
CEDD	California Employment Development Department
CERCLA	Comprehensive Environmental Response and Liability Act
CESA	California Endangered Species Act
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH_4	Methane
CHL	California Historical Landmark
CHP	California Highway Patrol
CHU	Critical Habitat Unit
CMP	Congestion Mitigation Plan
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_{2e}	Carbon Dioxide equivalent
CPUC	California Public Utilities Commission
CRHR	California Register of Historic Places
CRPR	California Rare Plant Rank
CSC	California Species of Special Concern
CUPA	Certified Unified Program Agency
CVC	California Vehicle Code
CWA	Clean Water Act
dB	decibel
dBa	A-weighted decibel scale
DC	Direct Current
DHS	Department of Health Services
DOC	Department of Conservation
DOE	Department of Energy
DOI	Department of the Interior
DOT	U.S. Department of Transportation
DPM	diesel particulate matter
DPR	Department of Pesticide Regulation
DRECP	Desert Renewable Energy Conservation Plan

DTRO	Desert Tortoise Recovery Office
DTSC	Department of Toxic Substances Control
DWMA	Desert Wildlife Management Area
EA	Environmental Assessment
ECP	Eagle Conservation Plan
EHS	Extremely Hazardous Substance
EIS	Environmental Impact Statement
EIR	Environmental Impact Report
EITP	Eldorado-Ivanpah Transmission Project
EJ	Environmental Justice
EMRU	Eastern Mojave Recovery Unit
EO	Executive Order
EPCRA	Emergency Planning and Community Right-to-Know Act
EPA	U.S. Environmental Protection Agency
EPAct	Energy Policy Act
EPS	Emissions Performance Standard
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FHSZ	Fire Hazard Severity Zone
FIRM	Flood Insurance Rate Map
FLPMA	Federal Land Policy & Management Act
FMU	Fire Management Unit
FP	fully protected
FR	Federal Register
FRA	Federal responsibility area
FSOC	former candidate for listing under the ESA; Species of Concern
ft	foot/feet
FTA	Federal Transit Administration
GCRP	Global Climate Research Program
gen-tie	Generation Interconnection
GHG	Greenhouse Gas
GLO	General Land Office
GO	General Order
Gt	gigatonne
gpd	gallons per day
gpm	gallons per minute
GWP	Global Warming Potential
H_2S	Hydrogen Sulfide
HA	Herd Area
HCM	Highway Capacity Model

HFC	Hydroflourocarbon
HMA	Herd Management Area
HMBP	Hazardous Materials Business Plan
HPTP	Historical Properties Treatment Plan
HR	hydraulic region
HSWA	Hazardous and Solid Waste Act
HWCA	Hazardous Waste Control Act
Hz	Hertz
I-15	Interstate 15
IBC	International Building Code
ICC	International Code Council
IM	Instruction Memorandum
in/sec	inches per second
IOU	investor-owned utility
IPCC	Intergovernmental Panel on Climate Change
ITE	Institute of Transportation Engineers
IUCN	The World Conservation Union
IVGB	Ivanpah Valley Groundwater Basin
IWMB	Integrated Waste Management Board
JLA	Joint Lead Agencies
JPOE	Joint Port of Entry
KOP	Key Observation Point
kV	Kilovolt
L	Limited Use
L_{dn}	day-night average noise
L_{eq}	equivalent continuous sound level
L_{max}	maximum instantaneous noise
LADWP	Los Angeles Department of Water and Power
lb(s)	pound(s)
LC	least concern
LEPC	Local Emergency Planning Committee
LOS	Level of Service
LRA	local responsibility area
LSTS	Large-Scale Translocation Site
LUP	Land Use Plan
LVMPD	Los Vegas Metropolitan Police Department
MBTA	Migratory Bird Treaty Act
MDAB	Mojave Desert Air Basin
MDAQMD	Mojave Desert Air Quality Management District
mg/L	milligram per liter
mg/m^3	milligram per cubic meter

mph	miles per hour
MSDS	material safety data sheet
MT	metric ton
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MRZ	Mineral Resource Zone
MS4	Municipal Separate Storm Sewer System
MUC	Multiple Use Class
MW	megawatt
MWh	megawatt hour
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NBMG	National Bureau of Mines and Geology
NDETR	Nevada Department of Employment, Training, and Rehabilitation
NDOT	Nevada Department of Transportation
NEPA	National Environmental Policy Act
NEMO	Northern and Eastern Mojave
NERC	North American Electric Reliability Corporation
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act, as Amended
NIEP	New Ivanpah Evaporation Pond
NIOSH	National Institute of Safety and Health
NLCS	National Landscape Conservation System
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NO_3	Nitrates
NOI	Notice of Intent
NOAA	National Oceanic and Atmospheric Administration
NOP	Notice of Preparation
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NPS	National Park Service
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
NSR	New Source Review
NT	not threatened
NWP	Nationwide Permit
O_3	Ozone
O&M	Operations and Maintenance
OEHHA	Office of Environmental Health Hazard Assessment
OES	Office of Emergency Services

OHV	off highway vehicle
OSHA	Occupational Safety and Health Administration
PA	Plan Amendment
PAR	Pesticide Application Record
pc/mi/ln	passenger-cars-per-mile-per-lane
PCE	passenger car equivalent
PCS	Power Conversion System
PEIS	Programmatic Environmental Statement
PFC	Perfluorocarbon
PFYC	potential fossil yield classification
PM	Particulate Matter
$PM_{2.5}$	Particulate Matter less than 2.5 microns
PM_{10}	Particulate Matter less than 10 microns
PMMP	Paleontological Mitigation and Monitoring Plan
POD	Plan of Development
POU	Publically Owned Utilities
PPE	personal protective equipment
PPV	peak particle velocity
PRC	Public Resource Code
PRPA	Paleontological Resources Preservation Act
PSD	Prevention of Significant Deterioration
PUP	Pesticide Use Proposal
PV	Photovoltaic
PVCS	PV combining Switchgear
PVGC	Primm Valley Golf Course
RCRA	Resource Conservation and Recovery Act
RMP	Risk Management Plan
RMS	root mean square
ROC	reactive organic compound
ROD	Record of Decision
ROI	region of influence
ROW	Right-of-Way
RPLI	Regional Paleontological Locality Inventory
RPS	Renewable Portfolio Standard
RQ	reportable quantity
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SANBAG	San Bernardino Associated Governments
SARA	Superfund Amendments and Reauthorization Act
SB	Senate Bill
SBAIC	San Bernardino Archeological Information Center
SBCFD	San Bernardino County Fire Department
SBCM	San Bernardino County Museum

SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SDWA	Safe Drinking Water Act
SEGS	Solar Electric Generating System
SERC	State Emergency Response Commission
SEZ	Solar Energy Zones
SF_6	Sulfur Hexaflouride
SHPO	State Historic Preservation Office
SLRU	Sensitivity Level Rating Units
SMA	Special Management Areas
SMARA	Surface Mining and Reclamation Act
SMGB	State Mining and Geology Board
SO_2	Sulfur Dioxide
SO_4	Sulfates
Solar LTMP	Solar Long-Term Monitoring and Adaptive Management Plan
SO_x	Sulfur Oxides
SPCC	Spill Prevention, Control, and Countermeasures
SWPPP	Stormwater Pollution Prevention Plan
SQRU	Scenic Quality Rating Units
SRA	State responsibility area
SRMA	Special Recreation Management Area
SSA	Sole Source Aquifer
SSC	California Species of Special Concern
SVP	Society of Vertebrae Paleontology
SWMP	Stormwater Management Plan
SWRCB	State Water Resources Control Board
T&E	Threatened and Endangered
TDS	total dissolved solids
TMDL	Total Maximum Daily Load
TPQ	threshold planning quantity
tpy	tons per year
TQ	threshold quantity
UPA	Unusual Plant Assemlages
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
VdB	decibel notation
VOC	Volatile Organic Compound
VRI	Visual Resources Inventory

VRM	Visual Resources Management
VRP	visibility reducing particle
VU	vulnerable
WA	Wilderness Area
WEAP	Worker Environmental Awareness Program
WL	watch list
WUS	waters of the U.S.
yr	year

7.0 Glossary

A

Adjacent: Defined by ASTM E1527-00 as any real property the border of which is contiguous or partially contiguous with that of the Site or would be contiguous or partially contiguous with that of the Site but for a street, road, or other public thoroughfare separating them.

Air Basin: A regional area defined for state air quality management purposes based on considerations that include topographic features that influence meteorology and pollutant transport patterns, and political jurisdiction boundaries that influence the design and implementation of air quality management programs.

Air Quality Control Region: A regional area defined for federal air quality management purposes based on considerations that include topographic features that influence meteorology and pollutant transport patterns, and political jurisdiction boundaries that influence the design and implementation of air quality management programs.

Alluvium: a fine-grained fertile soil consisting of mud, silt, and sand deposited by flowing water on flood plains, in river beds, and in estuaries.

Alluvial Fan: Fan shaped material of water deposited sediments.

Ambient Air Quality Standards: A combination of air pollutant concentrations, exposure durations, and exposure frequencies that are established as thresholds above which adverse impacts to public health and welfare may be expected. Ambient air quality standards are set on a national level by the U.S. Environmental Protection Agency. Ambient air quality standards are set on a state level by public health or environmental protection agencies as authorized by state law.

Ambient Air: Outdoor air in locations accessible to the general public.

Area of Critical Environmental Concern (ACEC): A designated area on public lands where special management attention is required: (1) to protect and prevent irreparable damage to fish and wildlife; (2) to protect important historic, cultural, or scenic values, or other natural systems or processes; or (3) to protect life and safety from natural hazards.

Attainment Area: An area that has air quality as good as or better than a national or state ambient air quality standard. A single geographic area may be an attainment area for one pollutant and a non-attainment area for others.

B

Basic Elements: The four design elements (form, line, color, and texture), which determine how the character of a landscape is perceived.

C

Cadmium Telluride (CdTe): A chemical compound composed of the elements cadmium and tellurium, which has photovoltaic properties (generates electrical current when exposed to light).

Carbon Monoxide (CO): A colorless, odorless gas that is toxic because it reduces the oxygen-carrying capacity of the blood.

Characteristic: A distinguishing trait, feature, or quality.

Characteristic Landscape: The established landscape within an area being viewed. This does not necessarily mean a naturalistic character. It could refer to an agricultural setting, an urban landscape, a primarily natural environment, or a combination of these types.

Climate: A statistical description of daily, seasonal, or annual weather conditions based on recent or long-term weather data. Climate descriptions typically emphasize average, maximum, and minimum conditions for temperature, precipitation, humidity, wind, cloud cover, and sunlight intensity patterns; statistics on the frequency and intensity of tornado, hurricane, or other severe storm events may also be included.

Community Noise Equivalent Level (CNEL): A 24-hour average noise level rating with a 5 dB penalty factor applied to evening noise levels and a 10 dB penalty factor applied to nighttime noise levels. The CNEL value is very similar to the Day-Night Average Sound Level (Ldn) value, but includes an additional weighting factor for noise during evening hours.

Contrast: Opposition or unlikeness of different forms, lines, colors, or textures in a landscape.

Contrast Rating: A method of analyzing the potential visual impacts of proposed management activities.

Criteria Pollutant: An air pollutant for which there is a national ambient air quality standard (carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, inhalable particulate matter, fine particulate matter, or airborne lead particles).

Critical Habitat: Habitat designated by the U.S. Fish and Wildlife Service under Section 4 of the Endangered Species Act and under the following criteria: 1) specific areas within the geographical area occupied by the species at the time it is listed, on which are found those physical or biological features essential to the conservation of the species and that may require special management of protection; or 2) specific areas outside the geographical area by the species at the time it is listed but that are considered essential to the conservation of the species.

Cultural Modification: Any man-caused change in the land form, water form, vegetation, or the addition of a structure which creates a visual contrast in the basic elements (form, line, color, texture) of the naturalistic character of a landscape.

Cultural Resource: A location of human activity, occupation, or use identifiable through field inventory, historical documentation, or oral evidence. Cultural resources include archaeological and historical sites, structures, buildings, objects, artifacts, works of art, architecture, and natural features that were important in past human events. They may consist of physical remains or areas where significant human events occurred, even though evidence of the events no longer remains. And they may include definite locations of traditional, cultural, or religious importance to specified social or cultural groups.

Cultural Resource Data: Cultural resource information embodied in material remains such as artifacts, features, organic materials, and other remnants of past activities. An important aspect of data is context, a concept that refers to the relationships among these types of materials and the situations in which they are found.

Cultural Resource Data Recovery: The professional application of scientific techniques of controlled observation, collection, excavation, and/or removal of physical remains, including analysis, interpretation, explanation, and preservation of recovered remains and associated records in an appropriate curatorial facility used as a means of protection. Data recovery may sometimes employ professional collection of such data as oral histories, genealogies, folklore, and related information to portray the social

significance of the affected resources. Such data recovery is sometimes used as a measure to mitigate the adverse impacts of a ground-disturbing project or activity.

Cultural Resource Integrity: The condition of a cultural property, its capacity to yield scientific data, and its ability to convey its historical significance. Integrity may reflect the authenticity of a property's historic identity, evidenced by the survival or physical characteristics that existed during its historic or prehistoric period, or its expression of the aesthetic or historic sense of a particular period of time.

Cultural Resource Inventory (Survey): A descriptive listing and documentation, including photographs and maps of cultural resources. Included in an inventory are the processes of locating, identifying, and recording sites, structures, buildings, objects, and districts through library and archival research, information from persons knowledgeable about cultural resources, and on-the-ground surveys of varying intensity.

Cultural Resource Values: The irreplaceable qualities that are embodied in cultural resources, such as scientific information about prehistory and history, cultural significance to Native Americans and other groups, and the potential to enhance public education and enjoyment of the Nation's rich cultural heritage.

Cultural Site: A physical location of past human activities or events, more commonly referred to as an archaeological site or a historic property. Such sites vary greatly in size and range from the location of a single cultural resource object to a cluster of cultural resource structures with associated objects and features.

D

Day/Night Average Sound Level (Ldn): A 24-hour average noise level rating with a 10 dB penalty factor applied to nighttime noise levels. The Ldn value is very similar to the CNEL value, but does not include any weighting factor for noise during evening hours.

Decibel (dB): A generic term for measurement units based on the logarithm of the ratio between a measured value and a reference value. Decibel scales are most commonly associated with acoustics (using air pressure fluctuation data); but decibel scales sometimes are used for ground-borne vibrations or various electronic signal measurements.

De Minimis Level. A threshold for determining whether various regulatory requirements apply to a particular action or facility. In an air quality context, de minimis thresholds typically are based on emissions, facility size, facility activity levels, or other indicators.

Desert Wildlife Management Area (DWMA): areas established in the NEMO Plan to address the recovery of the desert tortoise. They are intended to be areas where viable desert tortoise populations can be maintained (Category I habitat).

Distance Zones: A subdivision of the landscape as viewed from an observer position. The subdivision (zones) includes foreground-middleground, background, and seldom seen.

Drought condition: A hydrologic condition during a defined period when rainfall and runoff are much less than average.

E

Enhancement: A management action designed to improve visual quality.

Equivalent Average Sound Pressure Level (Leq): The decibel level of a constant noise source that would have the same total acoustical energy over the same time interval as

the actual time-varying noise condition being measured or estimated. Leq values must be associated with an explicit or implicit averaging time in order to have practical meaning.

Excavation: The scientific examination of an archaeological site through layer-by-layer removal and study of the contents within prescribed surface units, e.g. square meters.

F

Form: The mass or shape of an object or objects which appear unified, such as a vegetative opening in a forest, a cliff formation, or a water tank.

G

Geomorphic Province: Naturally defined geologic regions that display a distinct landscape or landform.

Greenhouse Gas: A gaseous compound that absorbs infrared radiation and re-radiates a portion of that back toward the earth's surface, thus trapping heat and warming the earth's atmosphere.

Groundwater Overdraft: The condition of a groundwater basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years during which water supply conditions approximate average conditions.

H

Habitat: A specific set of physical conditions that surround a single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover, and living space.

Hazardous Air Pollutant (HAP): Air pollutants which have been specifically designated by relevant federal or state authorities as being hazardous to human health. Most HAP compounds are designated due to concerns related to: carcinogenic, mutagenic, or teratogenic properties; severe acute toxic effects; or ionizing radiation released during radioactive decay processes.

Hertz (Hz): A standard unit for describing acoustical frequencies measured as the number of air pressure fluctuation cycles per second. For most people, the audible range of acoustical frequencies is from 20 Hz to 20,000 Hz.

Historical Site: A location that was used or occupied after the arrival of Europeans in North America (ca. A.D. 1492). Such sites may consist of physical remains at archaeological sites or areas where significant human events occurred, even though evidence of the events no longer remains. They may have been used by people of either European or Native American descent.

Historical Resource: A cultural resource, for the purpose of CEQA, listed in, or determined to be eligible for listing in, the California Register of Historical Resources (PRC § 21084.1). Subsumed in present analysis under "important historic and cultural aspects of our national heritage."

Historical Property: A cultural resource, for the purpose of Section 106, included in, or eligible for inclusion in the National Register of Historic Places (36 CFR § 800.16(l)(1). Subsumed in present analysis under "important historic and cultural aspects of our national heritage."

Hydrocarbons: Any organic compound containing primarily carbon and hydrogen, such as the alkanes, alkenes, alkynes, terpenes, and arenes.

I

Indian Tribe: Any American Indian group in the United States that the Secretary of the Interior recognizes as possessing tribal status (listed periodically in the Federal Register).

Indigenous: Being of native origin (such as indigenous peoples or indigenous cultural features).

Interdisciplinary Team: A group of individuals with different training, representing the physical sciences, social sciences, and environmental design arts, assembled to solve a problem or perform a task. The members of the team proceed to a solution with frequent interaction so that each discipline may provide insights to any stage of the problem and disciplines may combine to provide new solutions.

Invasive Species: An exotic species whose introduction does or is likely to cause economic or environmental harm or harm to human health (Executive Order 13122, 2/3/99).

Isolate: Non-linear, isolated archaeological features without associated artifacts.

K

Key Observation Point (KOP): One or a series of points on a travel route or at a use area or a potential use area, where the view of a management activity would be most revealing.

L

Landscape Character: The arrangement of a particular landscape as formed by the variety and intensity of the landscape features and the four basic elements of form, line, color, and texture. These factors give the area a distinctive quality which distinguishes it from its immediate surroundings.

Landscape Features: The land and water form, vegetation, and structures which compose the characteristic landscape.

Leasable Minerals: Minerals whose extraction from federally managed land requires a lease and the payment of royalties. Leasable minerals include coal, oil and gas, oil shale and tar sands potash, phosphate, sodium, and geothermal steam.

Line: The path, real or imagined, that the eye follows when perceiving abrupt differences in form, color, or texture. Within landscapes, lines may be found as ridges, skylines, structures, changes in vegetative types, or individual trees and branches.

Locatable Minerals: Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

M

Maintenance Area: An area that currently meets federal ambient air quality standards but which was previously designated as a nonattainment area. Federal agency actions occurring in a maintenance area are still subject to Clean Air Act conformity review requirements.

Management Activity: A surface disturbing activity undertaken on the landscape for the purpose of harvesting, traversing, transporting, protecting, changing, replenishing, or otherwise using resources.

Memorandum of Understanding (MOU): A written but noncontractual agreement between two or more agencies or other parties to take a certain course of action.

Meteorological Tower (MET). Instrument located at the proposed Project site, designed to measure temperature, humidity, relative humidity, solar radiation, and wind speed and direction.

Mineral Material Disposal: The sale of sand, gravel, decorative rock, or other materials defined in 43 CFR 3600.

Mining Claim: A mining claim is a selected parcel of Federal Land, valuable for a specific mineral deposit or deposits, for which a right of possession has been asserted under the General Mining Law. This right is restricted to the development and extraction of a mineral deposit. The rights granted by a mining claim protect against a challenge by the United States and other claimants only after the discovery of a valuable mineral deposit. The two types of mining claims are lode and placer. In addition, mill sites and tunnel sites may be located to provide support facilities for lode and placer mining.

Mitigation: Mitigation includes: (a) Avoiding the impacts altogether by not taking an action or parts of an action, (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation, (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment, (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, (e) Compensating for the impact by replacing or providing substitute resources or environments (40 CFR 1508.20).

N

National Pollutant Discharge Elimination System (NPDES): The NPDES permit program has been delegated in California to the State Water Resources Control Board. These sections of the Clean Water Act require that an applicant for a federal license or permit that allows activities resulting in a discharge to waters of the United States must obtain a State certification that the discharge complies with other provisions of the Clean Water Act.

National Register District: A group of significant archaeological, historical, or architectural sites, within a defined geographic area, that is listed on the National Register of Historic Places. See National Register of Historic Places.

National Register of Historic Places: The official list, established by the National Historic Preservation Act, of the Nation's cultural resources worthy of preservation. The National Register lists archeological, historic, and architectural properties (i.e. districts, sites, buildings, structures, and objects) nominated for their local, state, or national significance by state and federal agencies and approved by the National Register Staff. The National Park Service maintains the National Register. Also see National Historic Preservation Act.

National Scenic Trail: One of the three categories of national trails defined in the National Trails System Act of 1968 that can only be established by act of Congress and are administered by federal agencies, although part or all of their land base may be owned and managed by others. National Scenic Trails are existing regional and local trails recognized by either the Secretary of Agriculture or the Secretary of the Interior upon application.

Native American: Indigenous peoples of the western hemisphere.

Nitric Oxide (NO): A colorless toxic gas formed primarily by combustion processes that oxidize atmospheric nitrogen gas or nitrogen compounds found in the fuel. NO is a precursor of ozone, nitrogen dioxide, numerous types of photochemically-generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids. Most nitric oxide formed by combustion processes is converted into nitrogen dioxide by subsequent oxidation in the atmosphere over a period that may range from several hours to a few days.

Nitrogen Dioxide (NO2): A toxic reddish gas formed by oxidation of nitric oxide. Nitrogen dioxide is a strong respiratory and eye irritant. Most nitric oxide formed by combustion processes is converted into nitrogen dioxide by subsequent oxidation in the atmosphere. Nitrogen dioxide is a criteria pollutant in its own right, and is a precursor of ozone, numerous types of photochemically-generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids.

Nitrogen Oxides (NOx): A group term meaning the combination of nitric oxide and nitrogen dioxide; other trace oxides of nitrogen may also be included in instrument-based NOx measurements. NOx is a precursor of ozone, photochemically-generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids.

Non-native Species: See Invasive Species and Noxious Weed.

Noxious Weed: According to the Federal Noxious Weed Act (PL 93-629), a weed that causes disease or has other adverse effects on man or his environment and therefore is detrimental to the agricultural and commerce of the United States and to the public health.

Nonattainment Area: An area that does not meet a federal or state ambient air quality standard. Federal agency actions occurring in a federal nonattainment area are subject to Clean Air Act conformity review requirements.

O

Off-Highway Vehicle (OHV): Any vehicle capable of or designed for travel on or immediately over land, water, or other natural terrain, deriving motive power from any source other than muscle. OHVs exclude: 1) any non-amphibious registered motorboat; 2), any fire, emergency, or law enforcement vehicle while being used for official or emergency purposes; 3) any vehicle whose use is expressly authorized by a permit, lease, license, agreement, or contract issued by an authorized officer or otherwise approved; 4) vehicles in official use; and 5) any combat or combat support vehicle when used in times of national defense emergencies.

Operation and Maintenance (O&M) Facility. Building and yard constructed to store critical spare parts and provide a building for maintenance services.

Organic Compounds: Compounds of carbon containing hydrogen and possibly other elements (such as oxygen, sulfur, or nitrogen). Major subgroups of organic compounds include hydrocarbons, alcohols, aldehydes, carboxylic acids, esters, ethers, and ketones. Organic compounds do not include crystalline or amorphous forms of elemental carbon

(graphite, diamond, carbon black, etc.), the simple oxides of carbon (carbon monoxide and carbon dioxide), metallic carbides, or metallic carbonates.

Overdraft condition: A condition in which the total volume of water being extracted from the groundwater basin would be greater than the total recharge provided to the basin.

Ozone (O3): A compound consisting of three oxygen atoms. Ozone is a major constituent of photochemical smog that is formed primarily through chemical reactions in the atmosphere involving reactive organic compounds, nitrogen oxides, and ultraviolet light. Ozone is a toxic chemical that damages various types of plant and animal tissues and which causes chemical oxidation damage to various materials. Ozone is a respiratory irritant, and appears to increase susceptibility to respiratory infections. A natural layer of ozone in the upper atmosphere absorbs high energy ultraviolet radiation, reducing the intensity and spectrum of ultraviolet light that reaches the earth's surface.

P

Paleontological Resources (Fossils): The physical remains of plants and animals preserved in soils and sedimentary rock formations. Paleontological resources are for understanding past environments, environmental change, and the evolution of life.

Paleontology: A science dealing with the life forms of past geological periods as known from fossil remains.

Paleozoic Era: An era of geologic time (600 million to 280 million years ago) between the Late Precambrian and the Mesozoic eras and comprising the Cambrian, Ordovician, Silurian, Devonian, Mississippian, Pennsylvanian, and Permian periods.

Particulate Matter: Solid or liquid material having size, shape, and density characteristics that allow the material to remain suspended in the atmosphere for more than a few minutes. Particulate matter can be characterized by chemical characteristics, physical form, or aerodynamic properties. Categories based on aerodynamic properties are commonly described as being size categories, although physical size is not used to define the categories. Many components of suspended particulate matter are respiratory irritants. Some components (such as crystalline or fibrous minerals) are primarily physical irritants. Other components are chemical irritants (such as sulfates, nitrates, and various organic chemicals). Suspended particulate matter also can contain compounds (such as heavy metals and various organic compounds) that are systemic toxins or necrotic agents. Suspended particulate matter or compounds adsorbed on the surface of particles can also be carcinogenic or mutagenic chemicals.

Peak Particle Velocity: A measure of ground-borne vibrations. Physical movement distances are typically measured in thousandths of an inch, and occur over a tiny fraction of a second. But the normal convention for presenting that data is to convert it into units of inches per second.

Perennial Yield: The maximum quantity of water that can be annually withdrawn from a groundwater basin over a long period of time [during which water supply conditions approximate average conditions] without developing an overdraft condition.

pH (parts hydrogen): The logarithm of the reciprocal of hydrogen-ion concentration in gram atoms per liter.

Physiographic Province: An extensive portion of the landscape normally encompassing many hundreds of square miles, which portrays similar qualities of soil, rock, slope, and vegetation of the same geomorphic origin.

Pleistocene (Ice Age): An epoch in the Quaternary period of geologic history lasting from 1.8 million to 10,000 years ago. The Pleistocene was an epoch of multiple glaciations, during which continental glaciers covered nearly one fifth of the earth's land.

PM10 (inhalable particulate matter): A fractional sampling of suspended particulate matter that approximates the extent to which suspended particles with aerodynamic equivalent diameters smaller than 50 microns penetrate to the lower respiratory tract (tracheo-bronchial airways and alveoli in the lungs). In a regulatory context, PM10 is any suspended particulate matter collected by a certified sampling device having a 50 percent collection efficiency for particles with aerodynamic equivalent diameters of 9.5-10.5 microns and an maximum aerodynamic diameter collection limit less than 50 microns. Collection efficiencies are greater than 50 percent for particles with aerodynamic diameters smaller than 10 microns and less than 50 percent for particles with aerodynamic diameters larger than 10 microns.

PM2.5 (fine particulate matter): A fractional sampling of suspended particulate matter that approximates the extent to which suspended particles with aerodynamic equivalent diameters smaller than 6 microns penetrate into the alveoli in the lungs. In a regulatory context, PM2.5 is any suspended particulate matter collected by a certified sampling device having a 50 percent collection efficiency for particles with aerodynamic equivalent diameters of 2.0-2.5 microns and an maximum aerodynamic diameter collection limit less than 6 microns. Collection efficiencies are greater than 50 percent for particles with aerodynamic diameters smaller than 2.5 microns and less than 50 percent for particles with aerodynamic diameters larger than 2.5 microns.

Precursor: A compound or category of pollutant that undergoes chemical reactions in the atmosphere to produce or catalyze the production of another type of air pollutant.

Prehistoric: Refers to the period wherein American Indian cultural activities took place before written records and not yet influenced by contact with nonnative culture(s).

Programmatic Agreement (PA): A document that details the terms of a formal, legally binding agreement between one party and other state and/or federal agencies. A PA establishes a process for consultation, review, and compliance with one or more federal laws, most often with those federal laws concerning historic preservation.

Proposed Action. Desert Sunlight Solar Farm Project.

Protocol Agreement (Protocol): A modified version of the NPA, adapted to the unique requirements of managing cultural resources on public lands in California, and is used as the primary management guidance for BLM offices in the state.

Q

Quaternary Age: The most recent of the three periods of the Cenozoic Era in the geologic time scale of the ICS. It follows the Tertiary Period, spanning 2.588 ± 0.005 million years ago to the present. The Quaternary includes two geologic epochs: the Pleistocene and the Holocene Epochs.

R

Rehabilitation: A management alternative and/or practice which restores landscapes to a desired scenic quality.

Restoration (Cultural Resource): The process of accurately reestablishing the form and details of a property or portion of a property together with its setting, as it appeared in a

particular period of time. Restoration may involve removing later work that is not in itself significant and replacing missing original work. Also see Stabilization (Cultural Resource).

Riparian: Situated on or pertaining to the bank of a river, stream, or other body of water. Normally describes plants of all types that grow rooted in the water table or sub-irrigation zone of streams, ponds, and springs.

Road: A linear route declared a road by the owner, managed for use by low-clearance vehicles having four or more wheels, and maintained for regular and continuous use.

Route: "Routes" represents a group or set of roads, trails, and primitive roads that represents less than 100 percent of the BLM transportation system. Generically, components of the transportation system are described as routes.

S

Saleable Minerals: Common variety minerals on the public lands, such as sand and gravel, which are used mainly for construction and are disposed by sales or special permits to local governments. See also Mineral Materials.

Scale: The proportionate size relationship between an object and the surroundings in which the object is placed.

Scenery: The aggregate of features that give character to a landscape.

Scenic Area: An area whose landscape character exhibits a high degree of variety and harmony among the basic elements which results in a pleasant landscape to view.

Scenic Quality: The relative worth of a landscape from a visual perception point of view.

Scenic Quality Evaluation Key Factors: The seven factors (land form, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications) used to evaluate the scenic quality of a landscape.

Scenic Quality Ratings: The relative scenic quality (A, B, or C) assigned a landscape by applying the scenic quality evaluation key factors; scenic quality A being the highest rating, B a moderate rating, and C the lowest rating.

Scenic Values: See Scenic Quality and Scenic Quality Ratings.

Secretary of the Interior: The U.S. Department of the Interior is in charge of the nation's internal affairs. The Secretary serves on the President's cabinet and appoints citizens to the National Park Foundation board.

Sedimentary Rocks: Rocks, such as sandstone, limestone, and shale that are formed from sediments or transported fragments.

Sensitivity Levels: Measures (e.g., high, medium, and low) of public concern for scenic quality.

Special Status Species: Federal- or state-listed species, candidate or proposed species for listing, or species otherwise considered sensitive or threatened by state and federal agencies.

State Historic Preservation Office (SHPO): The official within and authorized by each state at the request of the Secretary of the Interior to act as liaison for the National Historic Preservation Act. Also see National Historic Preservation Act.

State Implementation Plan (SIP): Legally enforceable plans adopted by states and submitted to EPA for approval, which identify the actions and programs to be undertaken by the

State and its subdivisions to achieve and maintain national ambient air quality standards in a time frame mandated by the Clean Air Act.

State Water Resources Control Board (SWRCB): Created in 1967, joint authority of water allocation and water quality protection enables the State Water Board to provide comprehensive protection for California's waters. The mission of the nine Regional Boards is to develop and enforce water quality objectives and implementation plans that will best protect the State's waters, recognizing local differences in climate, topography, geology and hydrology.

Subsurface: Of or pertaining to rock or mineral deposits which generally are found below the ground surface.

Sulfur Dioxide (SO2): A pungent, colorless, and toxic oxide of sulfur formed primarily by the combustion of fossil fuels. It is a respiratory irritant, especially for asthmatics. A criteria pollutant in its own right, and a precursor of sulfate particles and atmospheric sulfuric acid.

T

Tertiary: The Tertiary Period marks the beginning of the Cenozoic Era. It began 65 million years ago and lasted more than 63 million years, until 1.8 million years ago. The Tertiary is made up of 5 epochs: the Paleocene Epoch, the Eocene Epoch, the Oligocene Epoch, the Miocene Epoch, and the Pliocene Epoch.

Texture: The visual manifestations of the interplay of light and shadow created by the variations in the surface of an object or landscape.

Toxic: Poisonous. Exerting an adverse physiological effect on the normal functioning of an organism's tissues or organs through chemical or biochemical mechanisms following physical contact or absorption.

Traditional Cultural Properties: Areas associated with the cultural practices or beliefs of a living community. These sites are rooted in the community's history and are important in maintaining cultural identity.

Trail: A linear route managed for human-powered, stock, or off-highway vehicle forms of transportation or for historical or heritage values. Trails are not generally managed for use by four-wheel drive or high-clearance vehicles.

U

Undertaking: Equivalent in present analysis to "proposed action" and "proposed project." An undertaking, pursuant to 36 CFR § 800.16(y), "means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license or approval."

V

Vandalism (Cultural Resource): Malicious damage or the unauthorized collecting, excavating, or defacing of cultural resources. Section 6 of the Archaeological Resources Protection Act states that "no person may excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands…unless such activity is pursuant to a permit issued under section 4 of this Act."

Variables: Factors influencing visual perception including distance, angle of observation, time, size or scale, season of the year, light, and atmospheric conditions.

Variety: The state or quality of being varied and having the absence of monotony or sameness.

Vehicle Miles Traveled (VMT): The cumulative amount of vehicle travel within a specified or implied geographical area over a given period of time.

Viewshed: The landscape that can be directly seen under favorable atmospheric conditions, from a viewpoint or along a transportation corridor. Protection, rehabilitation, or enhancement is desirable and possible.

Visual Contrast: See Contrast.

Visual Quality: See Scenic Quality.

Visual Resources: The visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features).

Visual Resource Management Classes: Categories assigned to public lands based on scenic quality, sensitivity level, and distance zones. There are four classes. Each class has an objective which prescribes the amount of change allowed in the characteristic landscape.

Visual Resource Management (VRM): The inventory and planning actions taken to identify visual values and to establish objectives for managing those values; and the management actions taken to achieve the visual management objectives.

Visual Values: See Scenic Quality.

W

Wetlands: Permanently wet or intermittently water-covered areas, such as swamps, marshes, bogs, potholes, swales, and glades.

Wilderness Area: An area formally designated by Congress as part of the National Wilderness Preservation System as defined in the Wilderness Act of 1964 (78 Stat.891), Section 2(c).

Wilderness Study Area: A roadless area or island that has been inventoried and found to have wilderness characteristics as described in section 603 of FLPMA and section 2(c) of the Wilderness Act of 1964 (78 Stat. 891). Source for both of these is BLM's IMP and Guidelines for Lands Under Wilderness Review (December 1979).

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